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FOREST RESOURCE DEVELOPMENT AGREEMENT
ENTENTE SUR LA MISE EN VALEUR DES RESSOURCES FORESTIERES

Canada Alberta

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Its primary objectives are to ensure the long-term availability of timber supplies; to optimize timber uses; and to contribute to the growth and diversification of Alberta's economy.

The Agreement comprises three programs: Reforestation; Applied research, technology transfer and opportunity identification; and Public information, evaluation and administration. These programs are managed by a joint Directorate and are implemented by the Canadian Forestry Service and the Alberta Forest Service.

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Ses objectifs principaux sont assurer la disponibilité à long terme de réserves de bois; optimiser leur utilisation; et contribuer à la croissance et la diversification de l'économie de la province.

L'Entente comprend trois programmes: Reboisement; Recherche appliquée, transferts de connaissances techniques et relevé des occasions; et Information, évaluation et administration. Ces programmes sont gérés par un Bureau de direction conjoint, et mis en oeuvre par le Service canadien des forêts et le Service forestier de l'Alberta.

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Resource Information Systems, Inc.
Annual Conference
Boston, Massachusetts
September 23-26, 1986

THE CONTINUING CHALLENGE: COMPETITION AND NEW PRODUCTS IN THE WORLD FOREST PRODUCTS MARKETS

Compiled by Tom Steele and Tim Williamson
Canadian Forestry Service

Attendance at the RISI annual conference
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Development Agreement

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TABLE OF CONTENTS

	Page
INTRODUCTION	1
SESSION I: THE ECONOMIC ENVIRONMENT THROUGH THE END OF THE CENTURY: A LASTING RETURN TO STABILITY?	
Dr. Lynn O. Michaelis	
Introduction	1
Analysis	3
Conclusions	9
Johan J. Veltkamp	
Introduction	9
Analysis	9
Conclusions	10
SESSION II: INTERNATIONAL COMPETITION IN FOREST PRODUCTS: THE FUTURE ROLE OF NONTRADITIONAL SUPPLIERS	
A. Overview of nontraditional suppliers of pulp and paper. Rod Young	
Introduction	11
Analysis	11
Conclusions	13
B. International competition in forest products: The future role of nontraditional suppliers. Dr. Taavi Siuko	
Introduction	13
Analysis	14
Conclusions	18
C. The role of nontraditional producers in world paper and board markets: Asia and Oceanian Therese Feng	
Introduction	18
Analysis	18
Conclusions	19
D. Prospects for suppliers in Latin America outside of Brazil and in Africa. Rod Young	
Introduction	20
Analysis	20
Conclusion	23

Page

SESSION III: TIMBER AND FIBER SUPPLY
IN NORTH AMERICA: SCARCITY OR SURFEIT?

A. Dr. Phillip L. Tedder

Introduction 23
Analysis 23
Canada 23
South 24
Pacific Northwest 28
Conclusions 28

B. Timber Demand: 1986-2000: What are the risks?
Keith Balter

Introduction 31
Analysis 31
Conclusions 32

SESSION IV: NEW PRODUCTS: EMPLOYING ADVANCED TECHNIQUES
TO MEET CHANGING CUSTOMER DEMANDS.

A. Laminates. George Carter

Introduction 33
Analysis 33
Conclusions 33

B. "New" solid wood products in the 1990's: MDF and particle
board growth potential. Bernard Fuller

Introduction 34
Analysis 34
Conclusion 41

SESSION V: RISI OUTLOOK PRESENTATIONS

A. Pulp and Paper Outlook

1. Printing and Writing Papers. John D. Maine
Introduction 42
Analysis 42
Newsprint 42
Printing and Writing Papers 47
Conclusions 51

2. Packaging Paper and Board. Kenneth Waghorne
Introduction 51
Analysis 51
Fibre Box 51

Page

Containerboard 53
Boxboard 53
Kraft Paper 59
Conclusions 59

3. World Market Pulp. Rod Young
Introduction 59
Analysis 59
Conclusions 62

B. FORSIM Outlook

1. Housing and the General Economy. Johan Veltkamp
Introduction 62
Analysis 64
Conclusions 65

2. Softwood Lumber. Robert Berg
Introduction 69
Analysis 69
Conclusions 74

3. Panel Products. Bernard Fuller
Introduction 75
Analysis 75
Conclusions 76

PREFACE

Attendance at the Resource Information Systems Incorporated Annual Conference and preparation of this report was funded under the Canada-Manitoba Forest Renewal Agreement and the Canada-Alberta Forest Resource Development Agreement. A primary objective of both Agreements is to conduct forest research and technology transfer activities in support of improved forest management for the economic, social, and environmental benefit of all Canadians.

THE CONTINUING CHALLENGE: COMPETITION AND NEW PRODUCTS IN THE WORLD FOREST PRODUCTS MARKETS

Resource Information Systems, Inc.
Annual Conference
Boston, Massachusetts
September 23-26, 1986

INTRODUCTION

This report summarizes the information presented at the annual Resource Information Systems, Inc. (RISI) conference held from September 23 to 26, 1986 in Boston, Massachusetts. RISI is a consulting firm which provides detailed economic statistics on the international forest products industry. This information includes historical data, written analyses, and quantitative forecasts.

The theme of the conference was: "The Continuing Challenge: Competition and New Products in the World Forest Products Markets." Within this theme, discussion was centered on three specific topics:

1) Competition: The period of disinflation and slow growth that began in 1980 has brought about an excess of capacity over demand, and a focus on cutting costs and raising productivity. In the face of slow markets, this has resulted in heightened competitive pressures.

2) New Products: The forest products industry has not been noted for product innovation, especially when compared to the computer or financial industries. New products and processes, however, are being developed and are changing the competitive landscape.

3) World Markets: In recent years when the US dollar soared, the reality of a world market for many forest products became quite clear. The emergence of so-called "nontraditional" producers of pulp and the excess lumber capacity of North America have sharpened the focus on competition and new products in an international setting.

This report is organized in the same format as the conference. A brief synopsis of each presentation follows. Unless otherwise noted, the summaries deal with the US situation.

SESSION I: THE ECONOMIC ENVIRONMENT THROUGH THE END OF THE CENTURY: A LASTING RETURN TO STABILITY?

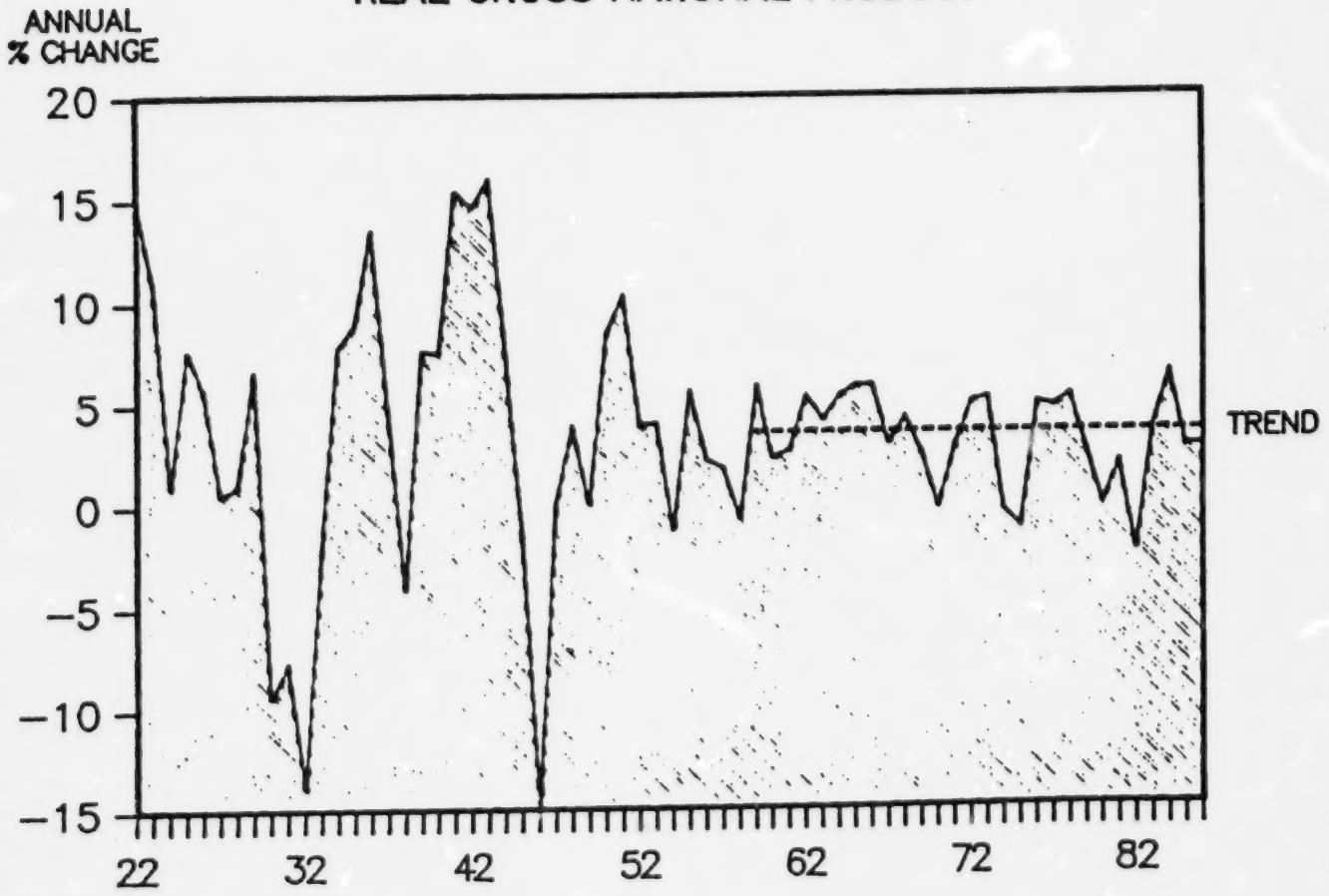
Dr. Lynn O. Michaelis
Chief Economist, Weyerhaeuser Company

Introduction

Over the past 30 years, economic growth has been relatively stable ranging from 2.5 to 3.0% per annum (Figure 1). However, within this era, there

FIGURE 1

REAL GROSS NATIONAL PRODUCT



have been periods of extreme market instability. For example the economic slowdown of the 1960's was preceded by a period of robust housing starts and growth in the 1950's. At one time, it was thought that the Vietnam War and the turbulent 1970's would lead to a more stable 1980's, yet the opposite has occurred. When looking at the post world war period, one message is painfully clear -- there has not been an average economic cycle. Consequently, we cannot simply look at the last five years as a basis for accurately projecting the next five.

Analysis

Real economic growth is the result of a complex inter-relationship between production factors (labor and capital) and policy factors (fiscal emphasis and monetary targets). Labor and capital are factors which dictate long-term growth potential; government policy is critical in defining growth trends and economic cycles. Several other factors are important in shaping future economic conditions. These include:

Demographic factors	- rapid growth of the middle-aged group - changing consumption patterns - changing political priorities - changing composition of the labor force
Technology factors	- continuation of 1920-1980 technology trends - US versus international technological development
International factors:	- population growth in developing countries

How will these factors specifically influence stability? That in large part depends upon which measure of stability is used (e.g. GNP growth; housing starts; inflation; domestic consumption growth; interest rates; composition of GNP; regional growth trends; exchange rates). Regardless of the measure, recent events hardly bode well for future economic stability. Consider the following:

1. Money growth is now near the 1983 record levels as the US Federal Reserve actively pursues an aggressive growth policy. Such expansive monetary policy may be a precursor to future inflation (Figure 2).

2. The ratio of non financial sector debt to nominal GNP was unstable through the 1960's and 1970's and has literally exploded in the 1980's. As a result, the US has become a more vulnerable society dependent upon foreign debt and sensitive to changing interest rates (Figure 3).

3. The US trade imbalance poses a major risk to the economy and may serve as a potential recession trigger. Increasing external debt could cause capital flight forcing the US to raise interest rates (Figure 4).

4. The strong dollar has made many US industries uncompetitive. Japan and Germany are now emerging as the world's financial centers.

5. As the US dollar drops in value, real net exports will begin to contribute to economic growth; however, there will be some costs. Import prices will rise and further contribute to an inflationary environment (Figures 5 and 6).

FIGURE 2

MONEY GROWTH IS NOW NEAR RECORD LEVEL OF 1983

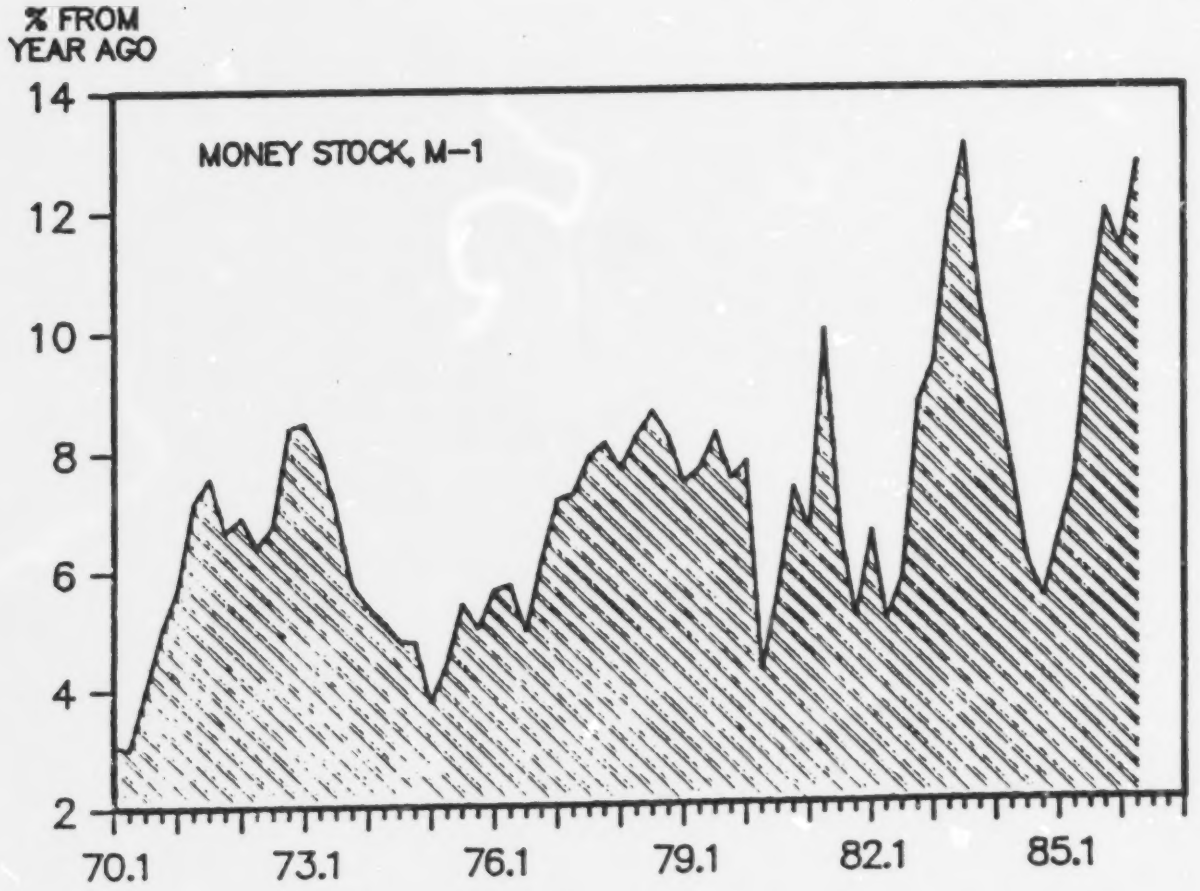


FIGURE 3

EXPLOSION OF DEBT TO GNP RATIO CONCERNS FEDERAL RESERVE

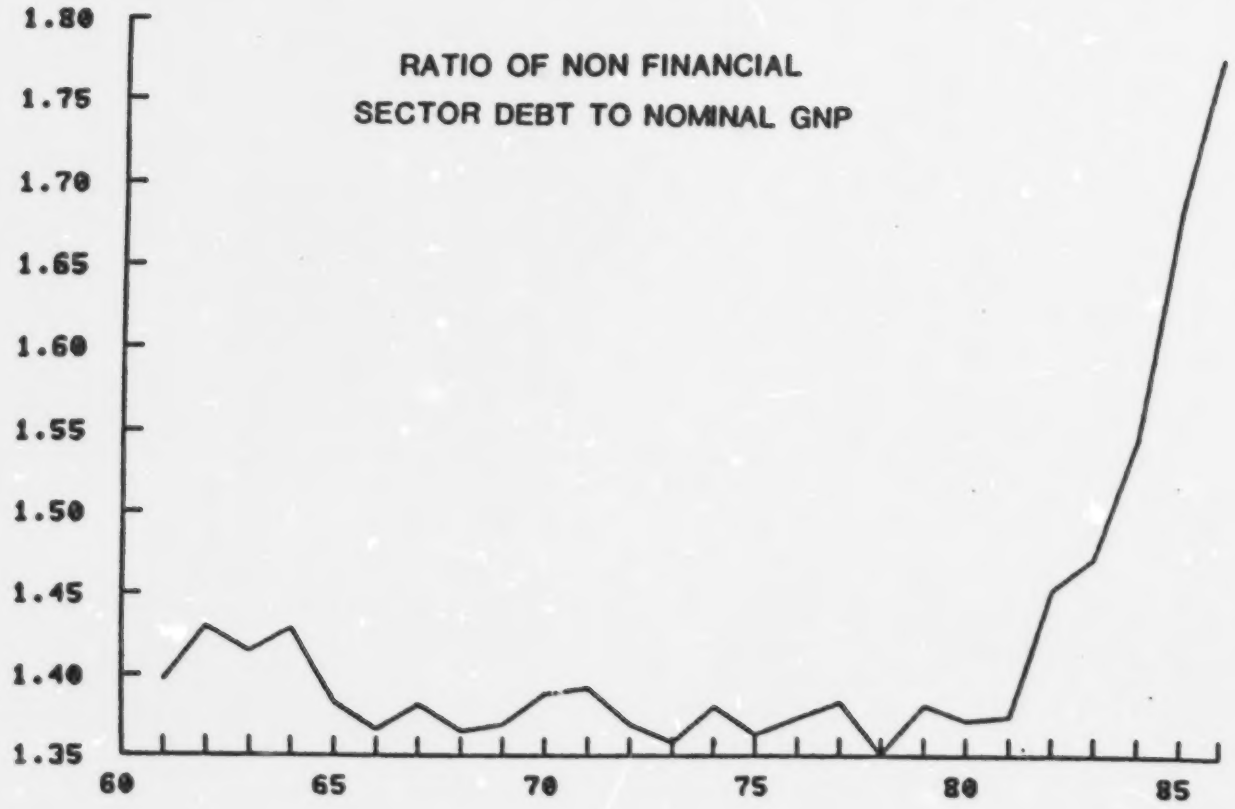


FIGURE 4

CURRENT TRADE IMBALANCE IS STILL HUGE: ADJUSTED FOR GOLD, JUNE WAS NEW LOW

CONTAINERBOARD BUSINESS MEETING
SEPTEMBER 6, 1984

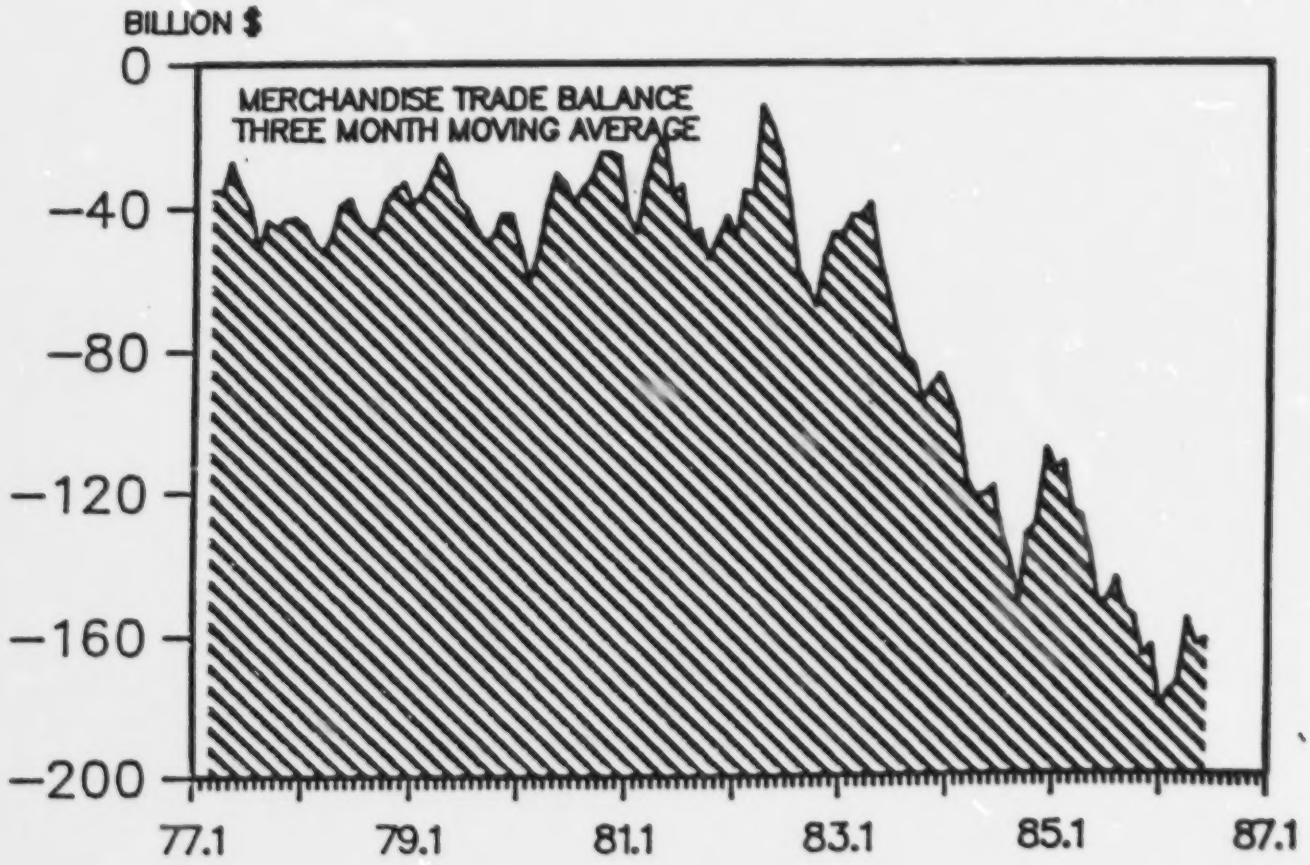


FIGURE 5

REAL NET EXPORTS START TO CONTRIBUTE TO GROWTH IN 1986–87

CONTAINERBOARD BUSINESS MEETING
SEPTEMBER 8, 1986

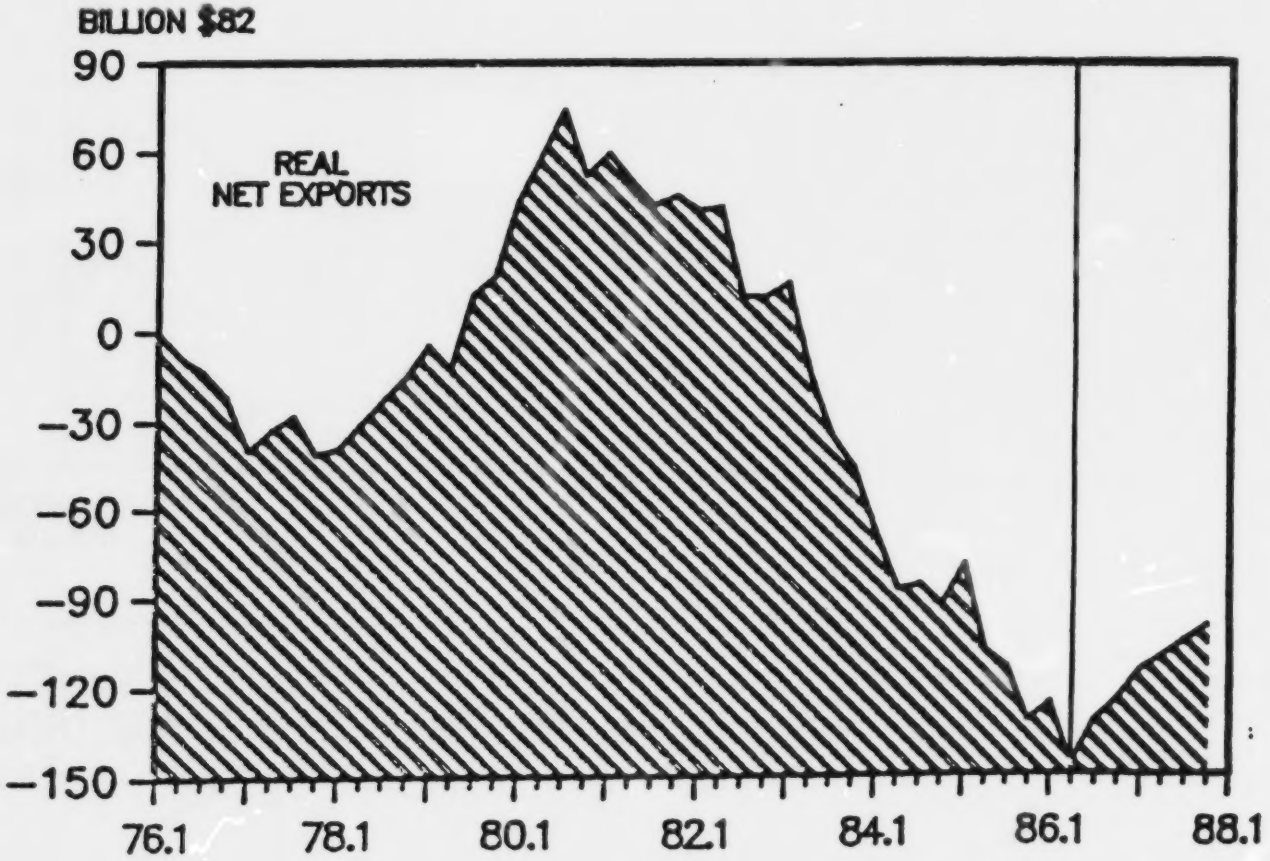
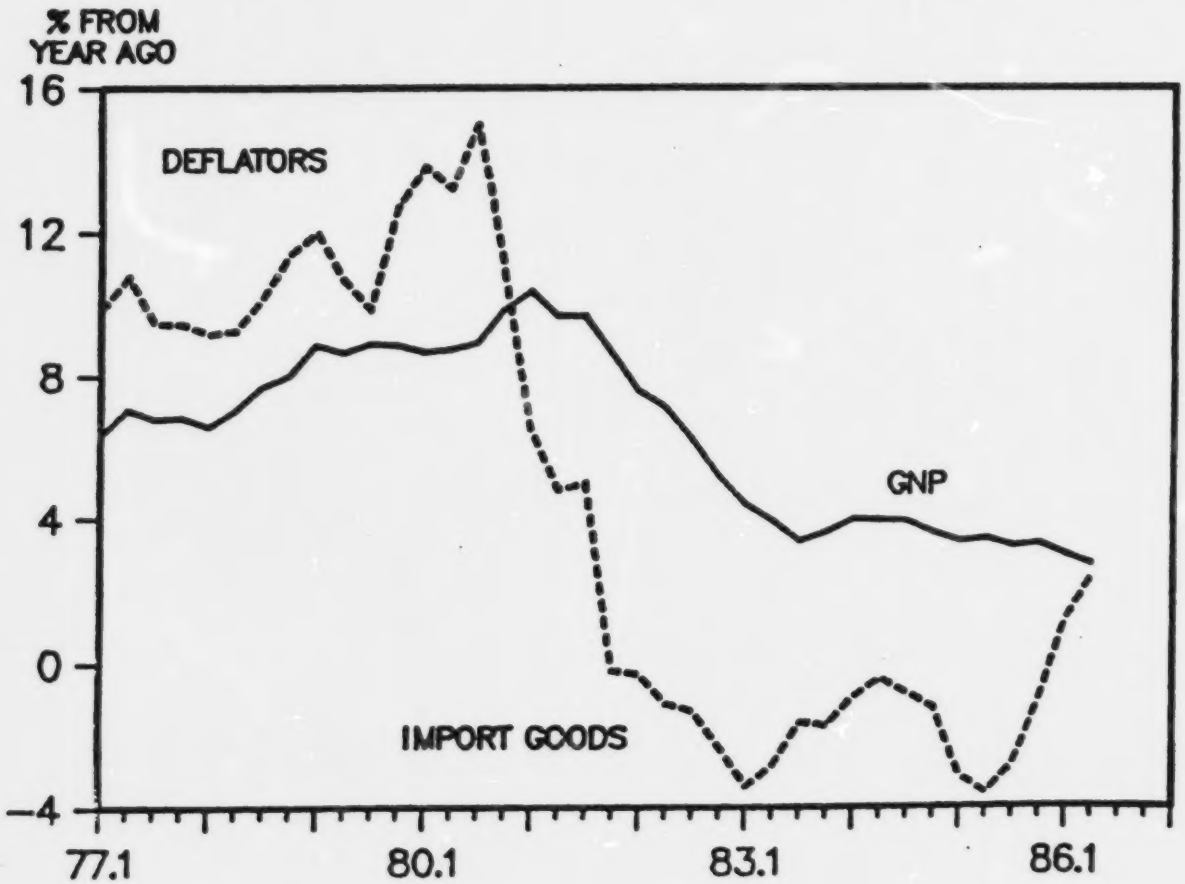


FIGURE 6

IMPORT GOODS PRICES ARE STARTING TO REFLECT THE DOLLAR'S DECLINE

CONTAINERBOARD BUSINESS MEETING
SEPTEMBER 9, 1986



Conclusions

These aforementioned factors are the seeds of future economic instability. If economic instability is pending, then the question arises "Is stability desirable?" The answer, not necessarily. Instability creates opportunities and it can be used to our advantage provided we are properly prepared. As forecasters and decision makers we should not only be concerned with the current cyclicality and stability/instability of the economy, but also with the underlying changes which shape future economic conditions.

Johan J. Veltkamp
President, Resource Information Systems, Inc.

Introduction

In early 1986 the US federal government made several promises: 1) The Gramm-Rudman Bill would finally reduce the federal budget deficit; 2) The falling dollar will reduce the foreign trade deficit; and 3) The fall in oil prices will result in accelerated but non-inflationary growth. In light of these promises, long-term interest rates dropped to 7.1% on 30-year treasury bonds, the stock market approached 2000 on the Dow, and housing starts soared to 2 million units, yet the initial promises remain unfulfilled. Several reasons are responsible:

Analysis:

1. The US budget deficit outlook remains uncertain. Some projections are as high as $200 billion for 1987, versus $144 billion identified as the Gramm-Rudman goal. This uncertainty is due to not enough spending cuts, slower economic growth, and lower current rates of inflation.

2. The US trade deficit has risen to a record level in the third quarter of 1986 due to the J-curve effect, slower overseas economic growth, and the evolution of newly industrialized countries.

3. GNP growth has remained slow at less than 2.5% through the first three quarters of 1986. Imports have siphoned off extra domestic consumption; investment has fallen due to slow growth, US tax reform, and previous overbuilding; and housing starts are levelling off at 1.8 million.

4. Inflation has come down but it threatens to pick up again. Any OPEC agreement will boost oil prices. As well, import prices are rising at double-digit rates due to the decline in the dollar.

In reaction to these unfulfilled promises, the financial markets have flashed several warnings.

> In spite of three cuts in the discount rate since mid-April, 30-year T-bond interest rates have risen from 7.1% in mid-April to 7.8% in late September causing a dramatic increase in the yield curve.

The stock market fell 8% in one week.

The US dollar has fallen below 2 D-mark and 153 Yen.

The price of gold has risen by 25% since mid-1986.

Conclusions:

Giving consideration to these current market signals, four economic forecasts are provided. In the very near term (1-3 months), consumer spending will be strong due to incentives offered by automobile manufacturers and accelerated purchasing of big-ticket items before year end to avoid the effects of tax reform. These events will cause the Federal Reserve to become less accommodative and consequently we will not see any further cuts in the discount rate before November, 1986.

For late 1986 and early 1987 a slowdown in consumer spending is forecast. This slowdown can be attributed to a decline in automobile sales once incentive programs expire and the pending tax reform will transfer spending from 1987 to 1986. Also the recent stock market mini-crash has lowered investor confidence in paper wealth. It is expected that investment will continue to fall through mid-1987. It appears that housing starts have topped out at 1.8 million units. Any rise in single-family dwelling starts will be more than offset by a drop in multiple unit construction. Nonresidential building will feel the full brunt from previous overbuilding and tax reform. And finally, investment in business equipment will be flat due to both tax reform and a slow economy. Consequently, we will see a mini recession between October 1986 and April 1987 as consumer spending slows, investment falls, and government spending contracts expire. It is felt that the decline in the dollar will preclude any monetary stimulus and improvement in the foreign trade balance will be too slow to compensate for domestic weakness.

RISI forecasts a world synchronous boomlet in the second half of 1987 and in 1988. Contributing factors include: i) a weak dollar which will cut imports from Japan and Germany in the second half of 1986 and stimulate the domestic manufacturing industry; ii) Japan and Germany will lower their interest rates to stimulate their economies in late 1986 or early 1987; iii) the US Federal Reserve will follow suit before the end of 1986; iv) the negative effects of tax reform will be worn out by mid-1987; v) stronger commodity prices, lower interest rates, and a weaker dollar are projected which will perk up indebted LDC economies; and vi), one final consideration, 1988 is a US presidential election year - a traditional stimulus to the economy.

For the long-run outlook (1989-2000), faster growth and somewhat higher inflation, together with lower real interest rates and federal expenditure reductions may make possible a soft landing for the highly leveraged US economy. There exist, however, several potential destabilizing factors: Protectionism (late 1980's); oil and OPEC (mid-1990's); US monetary policy (late 1980's); US fiscal policy (late 1980's); excessive deregulation (late 1980's); East- West politics (1990's); and LDC debts (late 1980's) are all exogenous factors which can have a dramatic impact on the US economy.

SESSION II: INTERNATIONAL COMPETITION IN FOREST PRODUCTS: THE FUTURE ROLE OF NONTRADITIONAL SUPPLIERS.

A. Overview of nontraditional suppliers of pulp and paper.

Rod Young,
Vice President, Resource Information Systems Inc.

Introduction:

The future role of nontraditional suppliers of forest products is of particular concern to traditional suppliers in North America and Scandanavia. The high productivity of the land base and relatively low cost of labor in nontraditional areas have led to expectations that these producers will account for increasingly larger shares of world forest products trade in the future. For this reason, international competition from nontraditional areas was one of the major themes of the conference. This presentation concentrated on pulp and paper since they are the primary product groups that will be affected by nontraditional suppliers.

Who are the nontraditional suppliers? They include producers in Latin America, Asia, Africa, Oceania, Iberian Peninsula (i.e., Spain and Portugal), Eastern Europe, and the USSR. The first four regions are of primary importance.

Analysis:

How important are the nontraditional suppliers (NTS)? In 1985 NTS accounted for 26% of world paper and board production and 21% of world pulp production. Table 1 shows the growth in the proportion of NTS production on a product by product basis from 1970 to 1985. In virturally every category, the share of world production by NTS has increased. The most substantial growth has occurred in the chemical market pulp grades where NTS increased their share of world production by 14.4% between 1970 and 1985. The dominant NTS region is Latin America and, in particular, Brazil. While other nontraditional regions remain net importers of forest products, Latin America has become a net exporter.

The primary factors that will affect the future performance of NTS includes fiber resources, supply of skilled labor, domestic government policy, infrastructure, environment, marketing capability, and the domestic capital goods industry. With respect to fiber resources, NTS have an obvious comparative advantage. Each region possess large reserves of untapped, virgin fiber. Also, because rotations are short, most regions are suitable for pulpwood-plantation management systems.

The success of NTS is dependent on a supply of skilled labor in production, management, and marketing. However, since most regions have not developed this expertise indigenously, NTS have had to import the required personnel from other areas. The difficulty of having to attract and retain skilled foreign labor at remote mill sites has been a major problem. This problem should decline, however, as a greater number of domestic workers obtain skills from their foreign counterparts.

Table 1

SHARE OF NONTRADITIONAL PRODUCERS IN WORLD PULP AND PAPER PRODUCTION
-THOUSAND METRIC TONS-

	1970	1985
PRINTING AND WRITING	4,967	10,598
SHARE	17.9	20.6
NEWSPRINT	2,610	5,078
SHARE	13.4	18.2
PACKAGING GRADES	15,693	32,414
SHARE	22.3	31.9
TOTAL PULP	12,557	28,113
SHARE	13.3	21.3
CHEMICAL MARKET PULP	2,163	6,766
SHARE	12.2	26.6

Government policy can be a critical factor in setting the pace of development of manufacturing facilities in NTS areas. Factors such as availability of export incentives, tax policy, availability of capital grants, profit repatriation policies, political stability, debt situation, and development priorities can all affect the ability of entrepreneurs and developers to attract capital for forestry investments.

Infrastructure development is an obvious factor to consider in assessing NTS potential. In many regions ports, railways, roads, schools, hospitals, etc., are either non-existant or in poor condition. Also telecommunications networks tend to be primitive. These factors are major constraints to more rapid development.

Local environment is another important factor to consider. Many NTS regions are tropical and are characterized by severe heat and high humidity at certain times of the year. The technology for production of pulp and paper was not developed for such climatic extremes resulting in extended down-time and low capacity utilization.

Marketing related factors that impact NTS include i) products from NTS are of a lower quality or grade than products from traditional supply areas, ii) deliveries from NTS areas are often disrupted thereby reducing the confidence of purchasers as to the reliability of NTS, and iii) NTS lack detailed knowledge about user markets.

Lastly, due to critical shortages of foreign exchange in many NTS regions, industry development is largely dependent on how much equipment and machinery can be supplied domestically. For the large scale, capital intensive processing technologies used in the manufacturing of pulp and paper, this may be a major constraint.

Conclusion:

The importance of NTS in world forest products is growing although the rate of growth is not as rapid as expected. Part of the reason that growth rates in NTS are lower than anticipated is that the timber supply shortages predicted to occur in traditional supply areas did not materialize. Based on existing fiber availability and land base productivity, NTS regions have tremendous potential. Other factors, however, such as; skilled labor availability, domestic government development policies, political stability, national debt, infrastructure development, local climate, product quality, reliability of supply, and foreign exchange availability may be constraints to more rapid development.

B. International competition in forest products: the future role of nontraditional suppliers.

Dr. Taavi Siuko
Indus. Klabin do Parana, SA (Brazil)

Introduction:

This presentation focused on identification of specific products, and market areas where NTS are likely to play an increasingly important role in

future years. Also, a strategy for development of NTS in the highly competitive world market was presented. Generally, NTS will be most successful if they concentrate on the production and sale of products where wood cost as a percentage of total sales are high (since the principal comparative advantage of NTS is low delivered wood costs).

Analysis:

1. Markets:

The primary market regions where significant trade in forest products occurs includes; Western Europe, North America, and the developing countries (Asia, Africa, and Latin America). The impact of NTS in these market zones is analyzed individually for both paper and board products and wood pulp as follows:

Western Europe: Total paper and board demand in Western Europe in 1985 was around 37 million tons, 30% of which was supplied by imports. Scandanavian and North American suppliers account for the major share of imports to western Europe, however, in the last 5 years, NTS have penetrated the market with wood-free printing paper, and kraft liner. Many NTS have now established marketing agencies in Western Europe to promote their products.

Total pulp demand in Western Europe in 1985 was around 14.1 million tons, 60% of which was supplied by imports. Scandanavian and American producers again accounted for the majority of imports shipping 3.3 and 3.0 million tons to Western Europe respectively. Approximately 1.3 million tons of eucalyptus pulp was sold in EEC (1.0 million from the Iberian Peninsula and .3 million from off-shore sources). The 300,000 tons is only 4% of total wood pulp imports into Western Europe, however, the percentage will grow as NTS gain a greater appreciation of how to compete in the quality minded European market.

North America: Approximately 10 million tons of paper (including newsprint) are imported into the U.S. annually. Canada possesses a strong comparative advantage in the production of this product for the North American market and there are extremely limited opportunities for NTS suppliers. With respect to wood pulp, approximately 200,000 tons of eucalyptus pulp was sold in the US in 1985. This is roughly 5% of total US imports in that year. There are some opportunities for expanded sales of eucalyptus pulp from NTS, however this product will have some difficulty competing against the long-fibered pulps produced in the US and Canada.

Asia, Africa, Latin America: The paper and board market in Asia's newly industrialized Countries is a very fast growing one with considerable opportunities for exporting nations (due to the fact that capital intensive pulp and paper enterprises are not industrial development priorities in these regions). Because NORSCAN suppliers consider the far east to be a marginal market, NTS will probably be primary suppliers as these markets develop and grow.

In the wood pulp market, Asia, Africa, and Latin America are the primary market destinations for pulp exports from NTS. Of the current 6 million

tons of eucalyptus pulp capacity, 3 million tons is sold domestically and the remaining 3 million tons is exported. As previously mentioned 1.3 million tons is exported to the EEC and .2 million tons is shipped to the U.S.

The remaining 1.5 million tons is exported to countries in Asia, Africa, and Latin America from other NTS. The wood pulp market in this region, however, is growing and as their economies develop the domestic demand for wood pulp will also increase. Projections are for a doubling of wood pulp exports to 3 million tons a year from NTS by the year 2000.

2. Industrial development strategy for nontraditional suppliers:

Because of the low cost of land and plentiful factors of production for tree growth (i.e., rain and sun) the principal comparative advantage in NTS is in low wood costs. Table 2 shows the differences in delivered wood costs. NTS do, however, have a number of other disadvantages including sparse population, unstable political climate, lack of managerial and technical skills, lack of industrial and public infrastructure, lack of adequate transportation and distribution facilities, and lack of long term capital. To compensate for these disadvantages, NTS must gear their production to take full advantage of their principal advantage (i.e., low wood costs).

The two primary elements of a development strategy to optimize forestry processing opportunities for NTS are product selection and vertical integration.

Given the high costs of transportation and the low value to weight ratio associated with the export of logs, pulpwood will not be an important export item. Some degree of processing is required to manufacture a product of sufficient value to justify the transportation costs associated with exporting. The two most promising products for export by NTS are bleached hardwood kraft (BHK) pulp from eucalyptus and kraftliner from radiata pine. Processing of higher value-added products for export such as bleached softwood kraft, newsprint, printing and writing papers, will probably be unsuccessful because i) product quality is of prime importance to consumers, and ii) the wood cost share of sale price is not significantly different between traditional and nontraditional suppliers.

The foregoing discussion suggests that vertical integration into higher valued products may not be possible for NTS. There was one example, however, of a Norwegian firm that was successful in vertically integrating its South American operation. The firm is a producer of bleached pulp and its major market is the quality minded European market. The strategy employed was to construct a pulp mill in Brazil that produced raw, unbleached pulp. The company then shipped the brown stock from their Brazilian site to their Norwegian plant where it was reprocessed and bleached to a high quality product suitable for the European market.

This strategy proved to be the best procedure from an economic stand point because of a) the high energy and chemical costs at the Brazilian site, and b) the higher quality control available at the Norwegian plant.

Table 2. Pulpwood costs by region

Region	Pulpwood Cost (Mill Gate)	
	Softwood	Hardwood
	----------US $ per cu. m.----------	
Finland	45	40
France	42	38
Sweden	40	35
Spain	26	28
Canada (Eastern)	24	28
USA (Southeastern)	21	25
Portugal	15	17
Brazil	12	10

Other opportunities for vertical integration in NTS areas will be for mills producing higher value - added products for their own growing domestic markets. If excess capacity develops as a result of this strategy, some production could be dumped into the export market at a very low price.

3. Global Fiber Supply:

There are currently about 150 million hectares of plantations around the world. The major portion of this area, however, is in relatively low productivity arid and semi-arid soils. High productivity sites (i.e., mean annual increment equals 15 cu. m. per ha per year) account for 8.5 million ha's. These lands are distributed as follows: 0.8 million ha's in Argentina, 0.8 million ha's in Australia, 1.0 million ha's in Brazil, 1.2 million ha's in India, 0.9 million ha's in Indonesia, 0.8 million ha's in New Zealand, and 1.0 million ha's in Africa.[1] Also, most of these countries and/or regions have active reforestation program and the total area of plantations is increasing rapidly. For example, Argentina plants 65,000 ha per year (50% softwood, 50% hardwood), Brazil plant 70,000 ha per year (71% eucalyptus, 29% pine), Chile has been planting 70,000 hectares a year (100% radiata pines), Australia and New Zealand are planting 50,000 hectares a year, and in South - East Asia, about 150,000 hectares are planted annually. The combined impact of these plantations is expected to be an additional 100 million cu. m. per year of pulpwood supply capacity by the year 2000.

4. Future Role of Nontraditional Suppliers:

Argentina: Expectations are that Argentina will be cutting an additional 8 million cu. m. a year by the year 2000. This level of harvest will support 1.6 million tons of new capacity. Fifty percent of this product will be consumed domestically and the remaining 50% will be traded internationally.

Brazil: An additional 20 million cu. m. per year will be available for harvesting by the year 2000 which will increase the annual productive capacity of the Brazilian industry by 5 million tons. Domestic demand will account for 3 million tons and 2 million tons will be exported (1.5 million tons bleached hardwood kraft, 0.5 million tons kraft liner).

Chile: Wood supply is projected to increase by 15 million cu. m. supporting an additional 2.3 million tons of pulp and paper production by the year 2000. Domestic demand will only account for 0.4 million tons and 1.9 million tons will be shipped for export (1.5 million tons in coated and uncoated printing paper).

Iberian Peninsula: Wood supply is projected to increase by 3 million cu. m. (eucalyptus pulp wood) supporting an additional 0.8 million tons of BHK production by the year 2000. Domestic demand will account for 0.6 million tons and 0.2 million tons will be exported (probably to the middle east or

[1]There may also be significant plantations in China and Japan with equal or greater productivity however, data is not available for these regions at this time.

to other Mediterranean countries). The incorporation of Spain and Portugal into the EEC will enhance the marketing opportunities for products in the region.

China: By the year 2000 approximately 50 million cu. m. of new wood supply will be available supporting 7 million tons of additional pulp and paper capacity. All of this production will be consumed domestically.

Oceania: The 10 million cu. m. of additional wood supply that will be harvested in Australia and New Zealand by the year 2000 will be destined for the export market. Of the approximately 3.6 million tons produced, 2 million tons will be shipped to Japan as pulpwood and the remaining 1.6 million tons will be in the form of pulp and paper exports to other consuming nations primarily in South - East Asia and the Pacific Rim.

South - East Asia: Out of the 30 million cu. m. of new wood supply which will be produced in this region by the year 2000, 20 million cu. m. will be converted to pulp and paper (4 million tons). The majority of this production will be consumed domestically.

Conclusion:

NTS are expected to account for 4.5 of the additional 8 million tons of pulp and paper trade forecasted to occur by the year 2000. NTS will not, however, make major inroads into markets currently dominated by traditional suppliers. With respect to paper and board, NTS will account for about 10% of the forecasted 23 million tons of additional trade. The success of NTS depends on product selection. In general, NTS will have the greatest success in products where, i) wood cost as percent of sales is relatively high, and ii) product quality is not of major importance. Products that satisfy these criteria include BHK (from eucalyptus) and kraft liner (from pine). NTS opportunities will be highest in their own domestic markets which are expected to grow at a faster rate than the North American and European market. Of the additional 200 million cu. m. of wood supply to be harvested by year 2000, 138 million will be cut in NTS areas.

C. The role of nontraditional producers in world paper and board markets: Asian and Oceanian:

Therese Feng, Economist,
Resource Information Systems Inc.

Introduction:

This presentation provided a country by country analysis of the potential for producers in Asia and Oceania to the year 2000. The following countries were reviewed: Taiwan, Korea, Peoples Republic of China, New Zealand, and Australia.

Analysis:

Taiwan: This country has now become self sufficient in paper and board products and will likely develop into a major exporter to the S.E. Asian

market. As evidenced by i) a well developed infrastructure, ii) favourable government incentives, and iii) high personal savings rate, the country's development policy and financial position are supportive of large scale forestry processing facilities. The only constraint to more rapid development are potential wood supply shortages.

Korea: Korea has recently become a significant net exporter of forest products. The country experienced a 700% increase in capacity between 1970 and 1975. Factors contributing to this growth include favourable government incentives (i.e., export incentives, government incentives for joint ventures), well developed infrastructure, well trained labor pool, and existence of technical expertise. The only constraint is the country's high dependency on raw material (i.e., wood pulp) imports.

Peoples Republic of China: The transition to a market economy will stimulate the Chinese economy and the demand for forest products will rise concurrently. Although the nation is nearly self-sufficient in paper, board, and pulp requirements, net imports into the country are likely to increase with the more active economy. The Chinese government is attempting to attract foreign capital and technical expertise into the country by keeping taxes at a minimal level and stressing joint ventures with foreign investors. Major limitations to development include i) relatively undeveloped infrastructure, ii) high regional variability in production, and iii) raw material availability.

New Zealand: New Zealand has been a net exporter of paper and board since the late 1950's. The country is a major supplier of products to southeast Asian markets and aggressive expansion into Asian markets in the 1990's is anticipated. Factors contributing to the favourable position of New Zealand as a forest products exporter include i) the existence of large integrated mill complexes with specialized production, ii) lower energy costs and, iii) a doubling of radiata pine pulpwood availability to 20.7 million cu. m. by the year 2000.

Australia: The prospects for Australia becoming a significant exporter to Asian markets are considerably less favourable than in New Zealand. The primary constraints to development include i) extremely high labor costs, ii) poor financial position (due to low commodity prices), iii) limited capital with many competing demands, and iv) low priority for development of the forest products industry in relation to agriculture, coal, metals, and other export industries.

Conclusion:

Asia, excluding Japan, is expected to remain in a huge net import position due to significant growth in demand. Taiwan and Korea have now become net exporters however these countries will only partially satisfy the large anticipated growth in demand for paper and board. Oceania will develop its industry to become a net exporter by the early 1990's primarily based on New Zealand production. Exports will be targeted for the growing Asian markets.

D. Prospects for suppliers in Latin America (outside of Brazil) and in Africa.

Rod Young,
Vice President, Pulp and Paper
Resource Information Systems Inc.

Introduction:

This presentation analyzed the current situation and future prospects of various NTS countries or regions in Latin America and Africa including: Chile, Argentina, Venezuela, Mexico, South Africa, West Africa, and East and Southern Africa (i.e., Kenya, Tanzania, Zimbabwe, Swaziland). Statistical summaries showing production, imports and exports for Latin America (excluding Brazil) and Africa are provided in Tables 3 and 4.

Analysis:

Chile: Chile possesses a very well developed forest industry with world scale facilities and close access to tide water. The Chilean industry is relatively concentrated in 3 major companies. Chile is a net exporter and in 1985 exports of paper and board amounted to 500,000 tons while exports of pulp totalled 500,000 tons. The future prospects for Chile are also relatively good due to i) large areas of plantation radiata pine, ii) direct access to plantations from the coast, and iii) absence of major debt problems in the country. The only constraint to more rapid development is the countries political situation which has caused potential foreign investors to with-hold funds.

Argentina: Development of Argentina's forest products industry has been hindered by extended economic problems. With some exceptions, the industry is characterized by a fragmented industrial structure with a large number of relatively small companies and mills. On balance, the country is neither an importer or an exporter of forest products with domestic production approximately equal to consumption. Future prospects for the Argentina forest industry are limited due to i) large debt problems, ii) other development priorities (i.e. agriculture and energy), iii) limited domestic capital goods production, and iv) union troubles.

Venezuela: This country is currently a major net importer of both pulp and paper. Plans to develop a larger forest products industry will be limited by i) lower oil revenues, and ii) higher priority sectors for development (i.e., petro-chemicals).

Mexico: Mexico is also a major net importer of forest products due to significant demand and relatively limited forest resources.

South Africa: This country's forest industry has grown significantly in the last decade based mainly on profits from the mining of the country's extensive mineral resources. The industry is concentrated among a few large companies and is characterized by world scale facilities. Although the country is a net exporter of paper and board products (420,000 tons in 1985), South Africa is still in a net import position with respect to pulp (100,000 tons in 1985). Based on favorable factors such as i) a well

TABLE 3

STATISTICAL SUMMARY OF LATIN AMERICA (EXCLUDING BRAZIL)
-THOUSAND METRIC TONS-

	1970	1985
PAPER AND BOARD		
PRODUCTION	2,597	5,094
IMPORTS	1,549	1,193
EXPORTS	120	268
WOOD PULP		
PRODUCTION	934	2,179
IMPORTS	534	746
EXPORTS	102	581

TABLE 4

STATISTICAL SUMMARY OF AFRICA
-THOUSAND METRIC TONS-

	1970	1985
PAPER AND BOARD		
PRODUCTION	1,159	2,162
IMPORTS	780	1,239
EXPORTS	41	435
WOOD PULP		
PRODUCTION	570	1,719
IMPORTS	141	307
EXPORTS	144	387

developed, plantation based resource, ii) strong financial situations, and iii) extensive production expertise, prospects for future development should be good. The highly unstable political situation, however, may be a significant constraint to this potential development.

West Africa: This region is heavily dependent on imports with only Nigeria and Cameroon processing a moderately active pulp and paper industry. Prospects for further development are limited due to i) hostile environment for high-tech mills, ii) a limited skilled labor pool, iii) limited borrowing capability, and iv) marketing problems.

East and Southern Africa: Currently this region is close to being self-sufficient in both pulp and paper. Significant production capacity exists in Kenya, Tanzania, Zimbabwe, and Swaziland. Prospects for further development are good based on: i) good plantation - based forest resource, ii) generally good debt position, and iii) generally stable governments.

Conclusions:

At the regional level, both Latin America and Africa will move toward a net export position by the end of the century. Countries and regions such as Venezuela, Mexico, and West Africa however will remain heavily dependent on imports. Future forest industry development should be most rapid in Chile and in east and southern Africa. The raw material for this development will come from fast growing soft wood plantations.

SESSION III: TIMBER AND FIBER SUPPLY IN NORTH AMERICA: SCARCITY OR SURFEIT?

Dr. Phillip L. Tedder
Resource Economics International; Inc.

Introduction:

The goal of this presentation is to provide an overview of the timber supply situation in North America. Discussion will focus on three separate geograhic regions - Canada, the South, and the Pacific Northwest.

Analysis:

Canada

Approximately 12% of the world's forests are within Canada's borders and are dominated by industrially useful conifers. In 1983, Canada's contributions to global production were 12.2% of softwood lumber, 14.4% of wood pulp, and 7.5% of paper and paperboard. The US received approximately 72% of all forest product exports from Canada.

Over the past decade, concerns have been increasing about the ability of the Canadian forest resource to meet the demands placed on it. These concerns stem from reductions in annual allowable harvest and from the prohibitive costs of accessing portions of the inventory.

To assess these concerns, the TRIM-Plus modelling system was developed for the Canadian forest products industry to determine the economic allowable cut levels for all provinces and territories given input from an initial simulation using the Timber Assessment Market Model (TAMM). In the baseline simulation, the economically available annual cut of softwoods for all of Canada was set at 55.3 million cunits in 1980. The cut level gradually declined to 54.8 million cunits in 1988 in response to reductions in available cut levels in regions where 1979 harvests exceeded calculated economically available allowable cuts (Figure 7).

From 1988 to 2030, the available cut level increased in response to assumed increases in the economically available portion of the annual allowable cut and to increases in utilization standards reaching 58.6 million cunits in 2000 and 73.6 million cunits in 2030. Improvements in economic accessibility contributed 9.6 million cunits to potential harvests in 2030 while improvements in utilization added 8.7 million cunits.

Softwood harvests in eastern Canada were limited by the available cut levels from 1980 on. Available timber supplies did not limit harvests for all of Canada until 1984. The combination of shifts in production from eastern Canada, a sharp increase in lumber requests, continued increases in pulp and plywood requests, and declines in economically accessible timber supplies resulted in timber availability limiting harvests in interior British Columbia, western Alberta, Saskatchewan, and Manitoba in 1983 and in coastal British Columbia and northern Alberta in 1984.

In short, even though margins for pulp and paper and lumber production were higher than previous estimates, demand levels of timber volume developed by the US TAMM model could not be met by Canada's economic allowable cut base from almost the beginning of the projection period. The study projected shortfalls of 9.5 million cunits (14%) in 2000 and 18.5 million cunits (21%) in 2030. Thus, the Canadian softwood harvest may increase somewhat in the future, however, those increases will fall short of satisfying the demands that will be placed upon the resource.

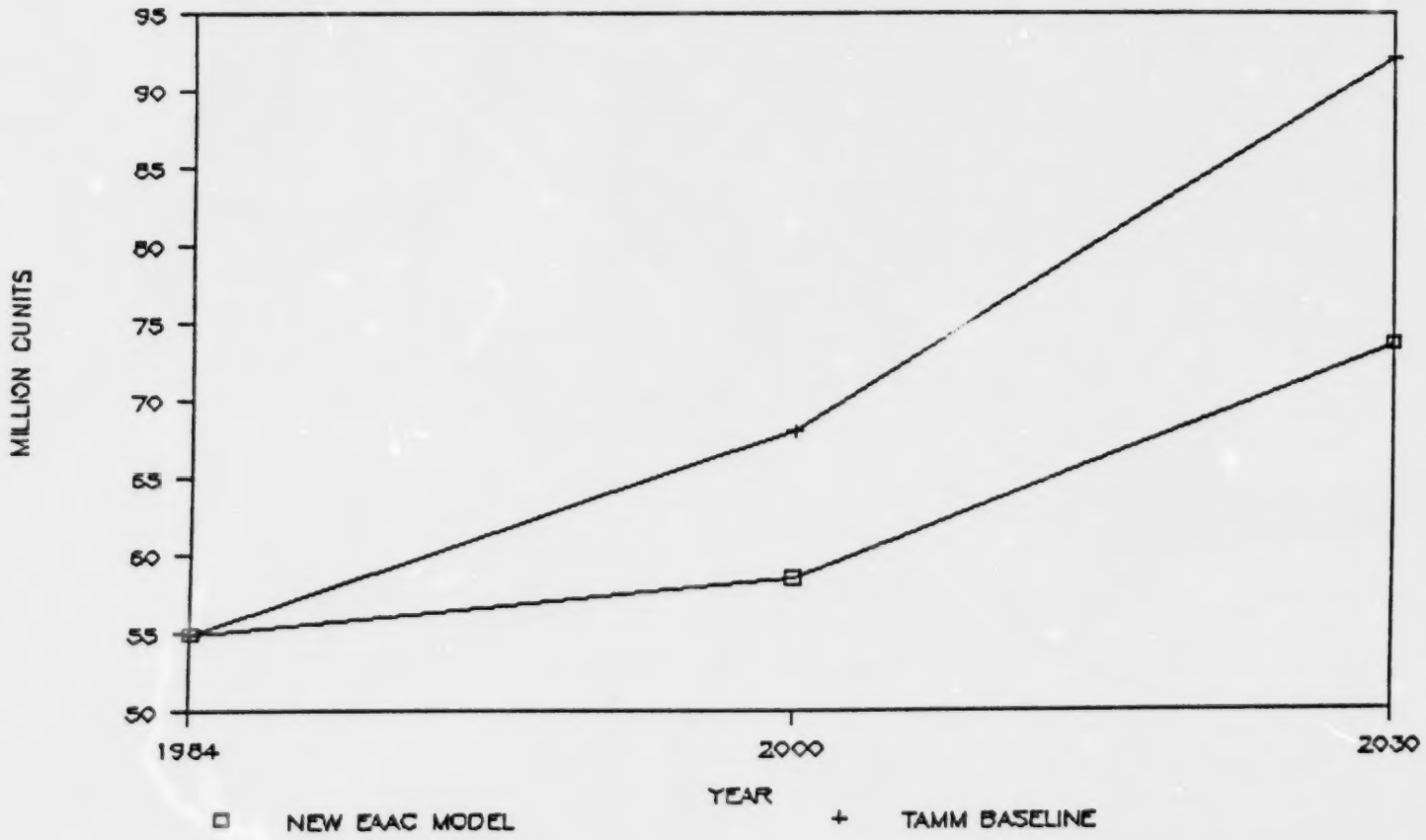
South

Numerous studies have been initiated which forecast future timber supplies from the 12 Southern States. Each study points to current landownership patterns as a constraint to increases in future timber production. Of the total timberland in the South, private non-industrial forest owners hold 68% of the timberland acres. Generally, these owners have done a poor job of management for timber production as over 75% of the acres are under-stocked. Of all the forestland, only 5% of the acres are in pine plantations and as pine stands are harvested, they usually revert to a preponderence of hardwood acres. These statistics may not be suprising as numerous acres are characterized as follows:

1. Land held for other objectives than timber management.
2. Owners have a one time harvest and then a land sale.
3. Short and long term leases do not generally include regeneration clauses.
4. Harvesting is implemented with no incentive or regulation to ensure regeneration.

FIGURE 7

BASELINE TAMM REQUEST VS. EAAC



As a result of these factors, the South has seen and will continue to see the majority of timber harvested on private land convert to hardwood types (Figure 8).

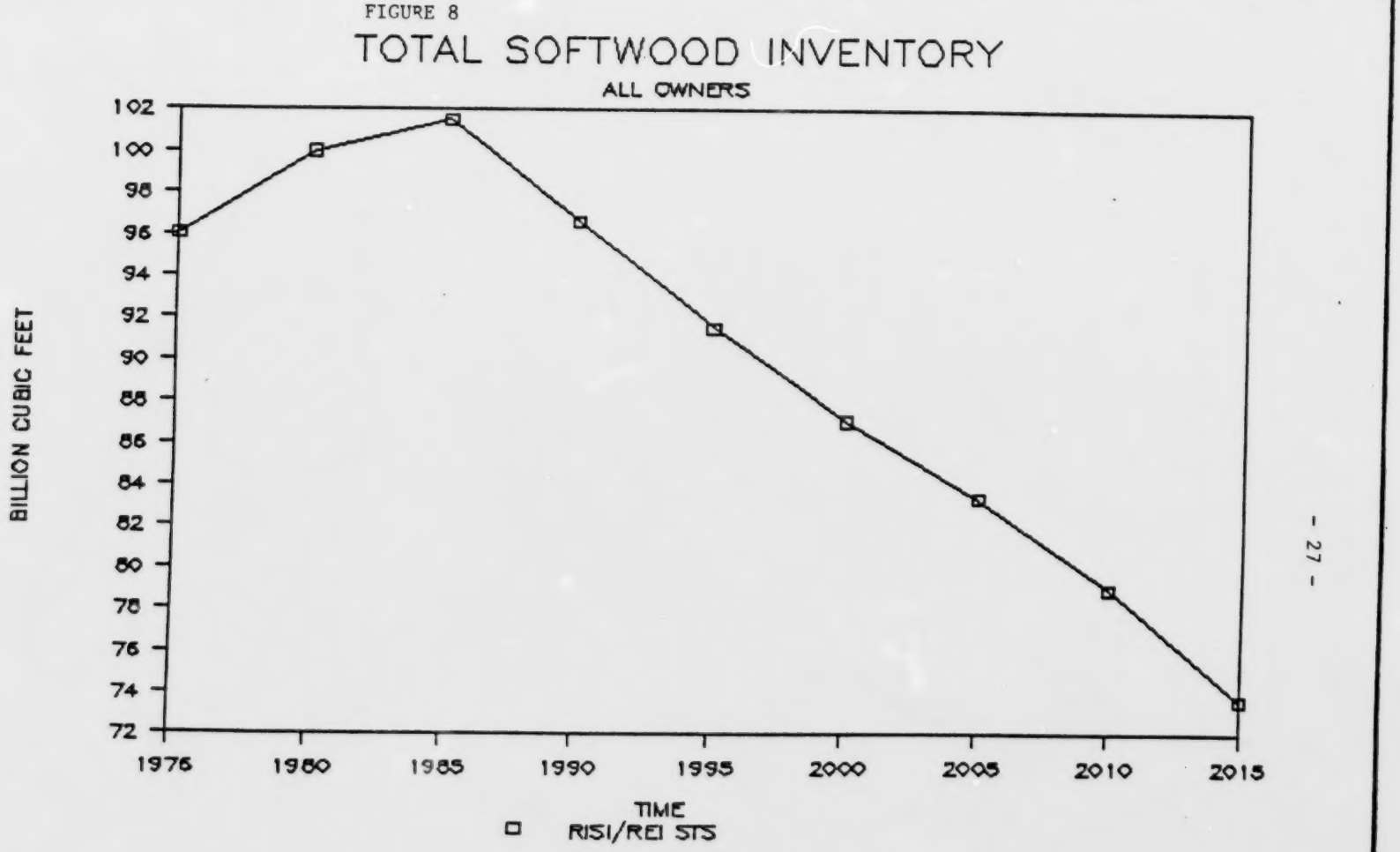
A second problem exists in the Southern timber inventory which causes even greater concern about the future of the timber supply. Capacity tends to be aggregated in particular areas such as northeast Florida and southwest Georgia, whereas the forest resource is spread over the whole 12 states and is not concentrated. Because of this, there are actually a tremendous amount of acres that are, in truth, not available for harvest now and most likely never will be.

Table 5 summarizes projected softwood and hardwood inventories for the South under 3 different scenarios. Results of the table indicate that the outlook for the southern softwood inventory is, at best, not good. Even if intensive management on a large geographic scale were undertaken immediately, the yields from these efforts would not be available for another 20 to 25 years. While the hardwood inventory will increase, the overall quality of that fiber resource is doubtful.

Table 5. Softwood and hardwood inventories (all ownerships) over time for three forecasting scenarios. (Million cubic feet)

Period	Scenario		
	RISI/REI Projection	Reduced Acres	Reduced Hardwood Harvest & Reduced Acres
		Softwood	
1985	101,509	91,392	91,392
1990	96,606	84,292	84,292
1995	91,537	78,058	77,468
2000	87,043	72,841	71,086
2005	83,335	68,728	65,059
2010	78,998	64,536	58,654
2015	73,639	59,484	51,219
		Hardwood	
1985	107,830	96,416	96,416
1990	111,588	98,029	98,029
1995	114,919	99,904	100,432
2000	116,986	101,849	103,378
2005	115,831	103,328	106,503
2010	113,119	105,022	109,953
2015	109,391	106,778	107,030

FIGURE 8


TOTAL SOFTWOOD INVENTORY
ALL OWNERS
BILLION CUBIC FEET
102
100
98
96
94
92
90
88
86
84
82
80
78
76
74
72
1976
1980
1985
1990
1995
2000
2005
2010
2015
TIME
RISI/REI STS

Pacific Northwest

The current and future timber supply situation in the Pacific Northwest (Washington and Oregon) is in a precarious state that has never been duplicated in that geographical area before. The private owner group is facing lower available supplies from their timberland; the National Forest harvest is estimated to decline approximately 20%; and the Bureau of Land Management and the other public ownership harvests are expected to be stable at best.

Currently, removals exceed growth by approximately 450 million cubic feet but that figure is deceiving when the National Forest growth estimates are included. The National Forest removals are based partly upon future capable growth and not current growth. When public values are extracted, removals drop to 676 million cubic feet with growth at 610 million cubic feet. These values, less the public statistics, better reflect the current situation of the private resource.

Viewing the age-class distribution of all private owners for the westside and eastside provides further insight into current and future problems of the private owner group. Assuming an average rotation age of about 60 years on the westside, there is little or no ability for forest industry and private owners to increase their harvest above current levels (Figure 9). And, if current harvest levels continue, the amount of future harvests must drop. The age-class distribution for the eastside does not quite show the same pattern as the west; however, volumes per acre, stocking levels, and growth are much slower than the west and rotation ages are 20 to 30 years longer (Figure 10). As a result, the eastside is in about the same position as the westside.

In summary, the Pacific Northwest private owner group's forest is reaching a state of regulation, that on the whole, will dictate the level of future harvests. Little or no ability to substitute private timber for public timber will exist. If National Forest harvest levels decline by the amount that has been suggested and no substitution takes place, the overall ability to harvest timber in the Pacific Northwest will decline in a like amount, competition will increase, and prices will increase assuming no changes in demand.

Conclusions

Overall, none of these three major producing regions appears likely to contribute significantly larger volumes of softwood timber removals. In Canada, possible modest increases in harvests will fall short of demand levels due to a lack of regeneration and accessibility problems. In the South, conversion of non-industrial acres to hardwoods after harvest will severely limit future softwood harvest levels. Even major changes in non-industrial land management could not ease the situation in the next two or three decades. Finally in the Pacific Northwest, the private softwood inventory is stretched to its productive capacity. Possible declines in Forest Service harvests cannot be made up by the private sector. The outlook can only be for increasing real timber prices for the next several decades.

FIGURE 9

ALL PRIVATE WESTSIDE ACRES

BY AGE CLASS

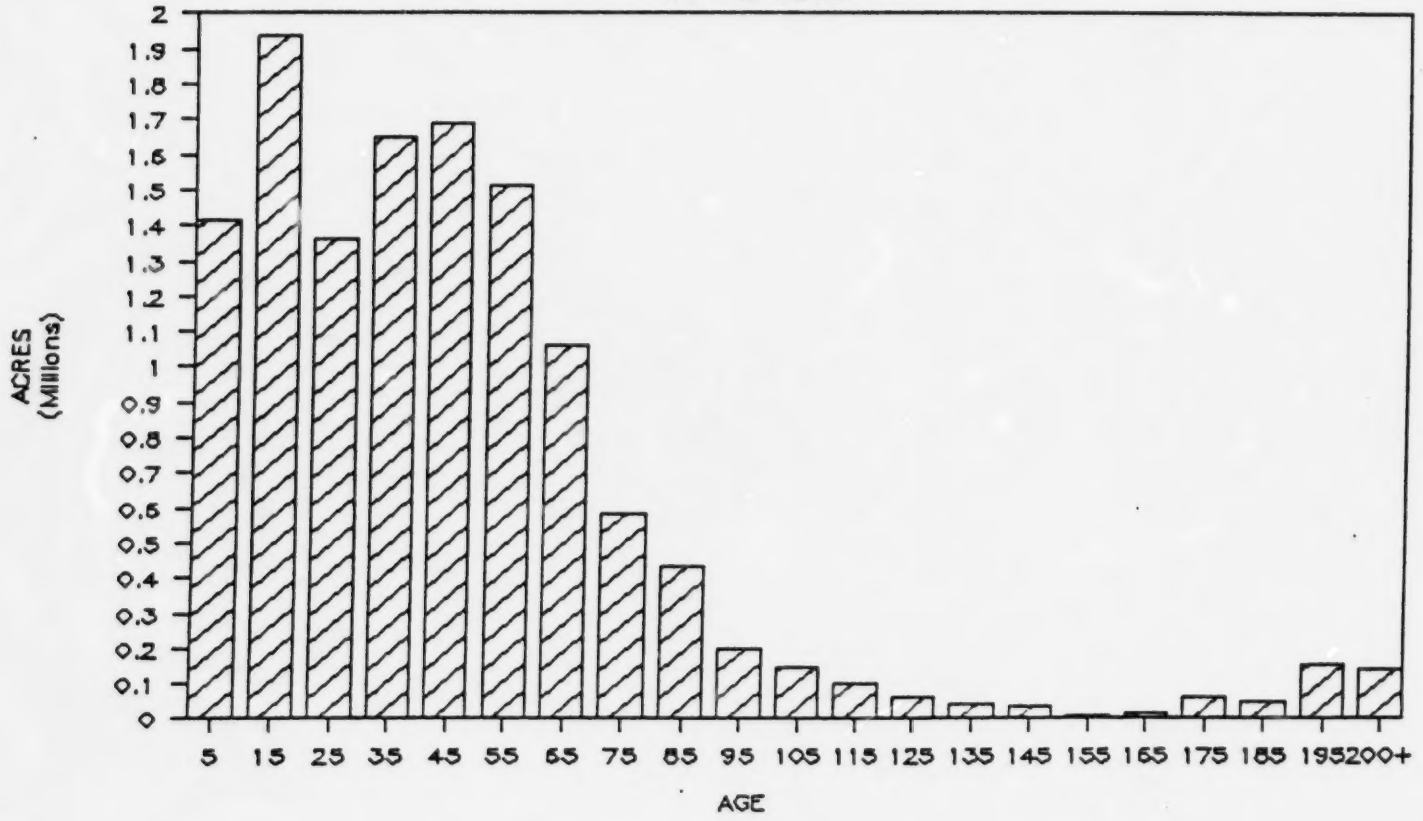
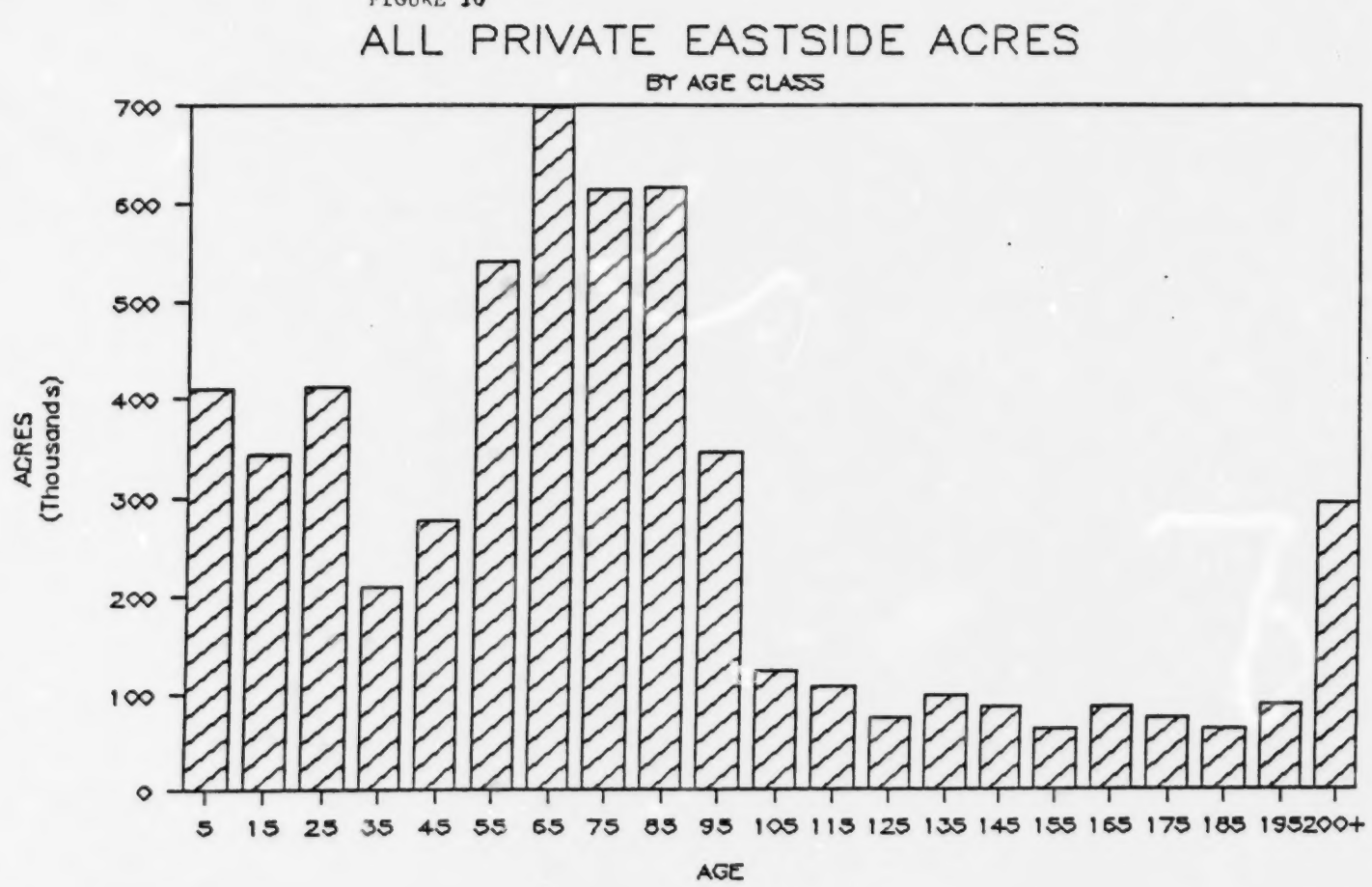


FIGURE 10


ALL PRIVATE EASTSIDE ACRES
BY AGE CLASS
ACRES (Thousands)
0
100
200
300
400
500
600
700
5 15 25 35 45 55 65 75 85 95 105 115 125 135 145 155 165 175 185 195200+
AGE

Keith Balter
Manager, Timber Services
Resource Information Systems, Inc.

Introduction:

This discussion will focus on timber demand issues for the period 1986-2000. Projections will be provided including discussion of those underlying factors which influence future demand levels.

Analysis:

For the near-term, domestic US lumber, panel, and paper demand will approach new records as housing starts rise near 2 million and the economy continues to grow. Export demand will surge due to both a weak US dollar and a rebound of overseas economies, led primarily by construction, especially in Japan. Canadian exports to the US will level out as domestic Canadian demand rebounds; possible quota/tariff measures become reality; overseas markets strengthen; and Canadian timber harvest reaches its limits. Timber supplies from the South will tighten once the glut of beetle-killed timber passes through the marketplace. It is expected that Western private timber inventory will continue to head down and public timber sales will be kept back by cuts in the budget.

For the 1990's, a weak demand for US timber is forecast. Several factors point to this projection:

1. Housing will move on a downward trend and become less cyclical due to the absence of the baby-boomer phenonmenon.

2. Declining log markets will develop in Japan, however, China remains a possibility.

3. Panel markets will become less focussed as panels will be produced almost everywhere.

4. Technological improvements will lead to increasing efficiency in the utilization of high quality timber.

5. Competing products (oil and metals) will enjoy some cost advantage due to continued excess capacity.

6. Increasing international competition will develop in paper and board markets as proposed mills come on line.

7. The paper industry will put less emphasis on expanding the production of commodities but rather concentrate on value added and distribution of their products.

Increased competition is forecast. Both Chile and New Zealand have substantial forest resource inventories which will mature in the late 1990's. These two countries will be able to compete in Pacific Rim markets for logs and lumber and possibly in US markets for boards. Taiwan is becoming a major furniture producer as they import hardwood logs (from the US) and manufacture

and ship furniture products to the US west coast. A combination of a vast and underutilized aspen resource and the development of oriented strand board (OSB) and medium density fiberboard (MDF) products will strengthen Canada's position. Perhaps the greatest competitive pressure in the paper, paperboard, and pulp industry will come from "nontraditional" forestry suppliers -- Brazil, Chile, and Portugal. These three countries, with their cheap labor and wood inputs, are rapidly becoming the most aggressive competitiors in the global market.

Increased product substitution will have a significant impact upon future timber demand levels. There are two elements of substitution: i) The use of alternative, non-wood materials; and ii) the substitution of lower grade fiber inputs for higher grade fiber inputs. Lumber products face the greatest threat from substitution. Plastics, steel and aluminum, engineered structural boards, beams, and trusses, and upgraded MDF are all potential substitutes for sawn products. In the panel industry, we can expect to see further improvements in reconstituted panels and material substitution in plywood which will result in the more efficient use of wood. Within the packaging industry, the increasing use of plastics and a shift to bulk shipping, which uses less package material, will depress demand. And finally, material substitution (hardwood/softwood; secondary fiber; coating and fillers) will cause timber demand to trend lower.

Technological change is the most difficult demand-driver to forecast. Development and adoption of advanced technologies is primarily dependent on wood inflation relative to other commodities. What trends are developing?

- Advances in construction engineering which use less wood

- New engineered solid wood products

- Greater flexibility in fiber specifications for paper-board

- More fiber efficient pulping processes: high yield pulping; better bleaching

- Improved harvesting technology

Conclusions

As indicated in the previous presentation, wood supplies from traditional sources are tightening. There are, however, enough cracks in the system (i.e. increased competition; substitution; and technological change) to ease demand. Consequently, price pressure will not build.

SESSION IV: NEW PRODUCTS: EMPLOYING ADVANCED TECHNOLOGIES TO MEET CHANGING CUSTOMER DEMANDS

A. Laminates.

George Carter
President, Laminating Materials Association

Introduction:

The use of non-wood laminates upon wood-based substrates could have a significant effect on the forest products industry in the future. In fact, laminates may result in the production of forest products specifically manufactured to meet the standards required for use as a substrate for laminated products.

Analysis:

The kitchen cabinet and furniture market is burgeoning in North America. The electronic furniture market is becoming especially important and many companies are specializing in the production of these products. Electronic furniture includes items such as wall units for stereo sound systems, micro-wave carts, computer tables, and T.V./V.C.R. carts. In addition to the general growth in consumption, production methods are changing in response to new technologies and products. For example, kitchen cabinets are going to the new 32 mm system where the cabinet is held together by dowels and metal brackets. This system requires precision cutting because there is no margin for error in cabinet assembly. Laminates are also increasing in importance. The use of non-wood veneers such as; vinyls, light weight papers, impregnated foils, thermo-fused laminates, and hot stamped foils, is gaining prominence. The quality of the substrate is extremely important for these laminates and certain quality considerations will dictate the marketability of the substance. The substrate quality considerations of prime importance are surface smoothness, and squareness of the edges. Furniture manufactures using laminates in their products demand substrates with smooth surfaces and square edges. Particle board does not possess these qualities. The forest product with the greatest potential as a substrate material for laminates is MDF with a banded edge.

Conclusion:

The kitchen cabinet and furniture manufacturing industries are rapidly growing in North America. Traditional methods of manufacturing are changing, however, with the increasing use of non-wood laminates. Wood quality considerations of prime importance for substrate materials are i) smoothness of surface, and ii) squareness of edges. MDF with banded edges will likely be the way to go with respect to wood-based substrate for non-wood veneers.

B. New solid wood products in the 1990's: MDF and particle board growth potential.
Bernard Fuller
Vice President, RISI

Introduction:

This presentation focused on particle board and medium density fiber board (MDF). These are two relatively new products that are expected to gain prominence in the US forest products market over the next quarter century. The presentation looked at the reasons why MDF and particle board are increasing in importance. Recent technical developments, descriptions of major users, trends in production, imports to the US, impact of imports on domestic production, and long-run forecasts of US consumption of particle board and MDF were provided.

Analysis:

The forest products market is changing and will continue to change over the next quarter century primarily in response to 2 important influences: i) timber and other supply considerations, and ii) shifting market needs.

On the supply side, the considerable real increases in softwood stumpage prices experienced since the turn of the century are indictive of the increasing economic scarcity of the softwood resource. Not only are quality and economically available supply declining but the regional distribution of supply is changing. Hardwoods, on the other hand, remain relatively under- utilized. These factors are critical in explaining the changes that are occurring in traditional forest products markets.

With respect to foreign competition, US producers of traditional forest products will come under increasing pressure from foreign producers of substitute products such as waferboard, OSB, and MDF. Particularily strong competition (vis a vis the US) will originate from Canada, Chile, and New Zealand.

On the demand side, changing demographics and the development of new non-wood substitutes are influencing traditional patterns of US forestry. Although wood use in construction is still dominant, new residential construction activity is declining in relative importance. As population growth declines and the populace ages in the US, the number of housing starts are expected to decline in absolute terms.

Other competitive considerations are the recent development of non-wood building materials. New products development in the area of i) vinyl sidings and moldings and ii) steel structural systems (such as aluminum wall studs) will put considerable pressure on traditional products. Although wood is still perferred in North America, production of wood-based products must be cost competitive and efficient. Real prices cannot be allowed to escalate if wood products are to retain market share.

An expected response to these evolving supply and demand based pressures is the development of alternative, new wood based products to substitute for traditional products. Some of these "new" products include; laminated veneer

lumber (LVL), laminated beams, parallel strand lumber (or parallam), waferboard and oriented strandboard, particle board, medium density fibre board (MDF), and molded products. The common feature of all of these products is that they are reconstituted wood-fibre based commodities.

Even traditional products are adapting in response to market forces. For example, features such as machine stress rating and chemical treatment of lumbers, enhance the marketability of lumber. New, more efficient, production methods such as finger-jointing, and laser guided cutting systems are reducing average costs as lower quality round wood finds its way to the mills.

Clearly, traditional forest product markets are changing and new products are being developed in response to an array of supply and demand related influences. Two relatively new products with considerable growth potential are particle board and MDF.

Particle board (PB) is a panel product that utilizes very fine wood fibre-based particles that are bonded together by a urea formaldehyde adhesive. Shipments of particle board grew a healthy 7% from 1.67 billion sq. ft. to 1.80 billion sq. ft. between the first half of 1985 and the first half of 1986. Recent technological improvements in particle board include: improved quality of face, reduced formaldehyde emissions, and reduced resin and wood costs.

MDF is also a panel product however, the particle size is larger and the product is stronger than particle board. Recent growth in MDF production has been substantial. Shipments between the first six months of 1985 and 1986 grew 26% from .321 billion sq. ft. to .403 billion sq. ft. Recent improvements in MDF include continuous pressing, acceptance as an exterior and interior grade product (i.e., can be used in high humidity areas such as bath rooms, kitchens, and swimming pool areas), and continued improvements in quality for machining and edging.

Future growth in US domestic production of particle board and MDF will be a function of 3 primary factors including i) growth in the aggregate market, ii) growth in useage per unit of secondary manufactured products, and iii) the amount of foreign imports.

The major users of particle board and MDF are furniture and cabinet makers and so the rate of growth in PB and MDF consumption is dependent on the rate of growth of consumption of furniture and cabinetry. The furniture and cabinet market in the US today is characterized by 3 factors:

1. US production has not kept pace with US consumption of household furniture;

2. Office furniture consumption has grown far more rapidly than household furniture; and

3. The strong US dollar has spurred strong growth in imports of furniture.

Evidence of the first factor is provided in Figure 11 (furniture consumption and production, 1960-1985). Figure 12 (U.S. Furniture Production 1960-1985) demonstrates the dominance of the office furniture market over the household

FIGURE 11 FURNITURE CONSUMPTION AND PRODUCTION, 1960 - 1985
(1977=100)

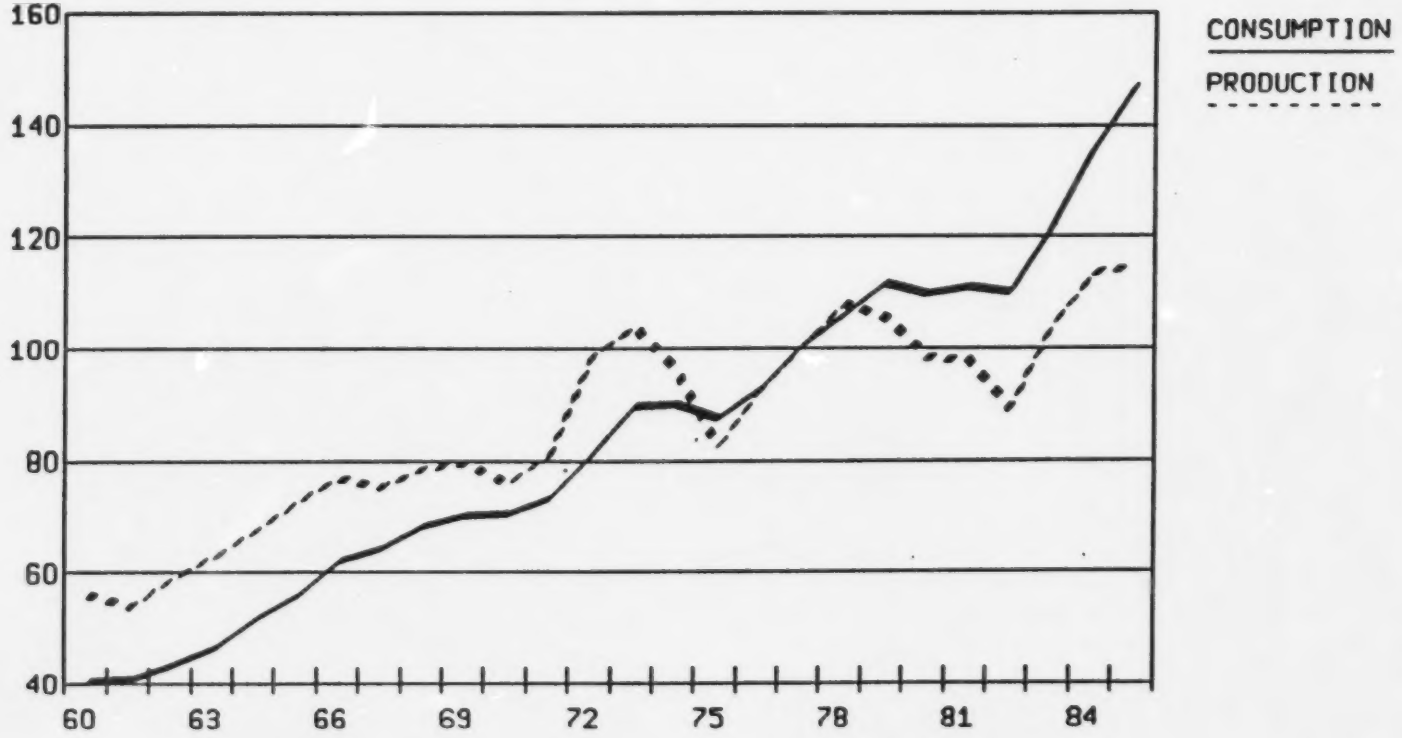


FIGURE 12 U.S. FURNITURE PRODUCTION. 1960 - 1985
(1977=100)

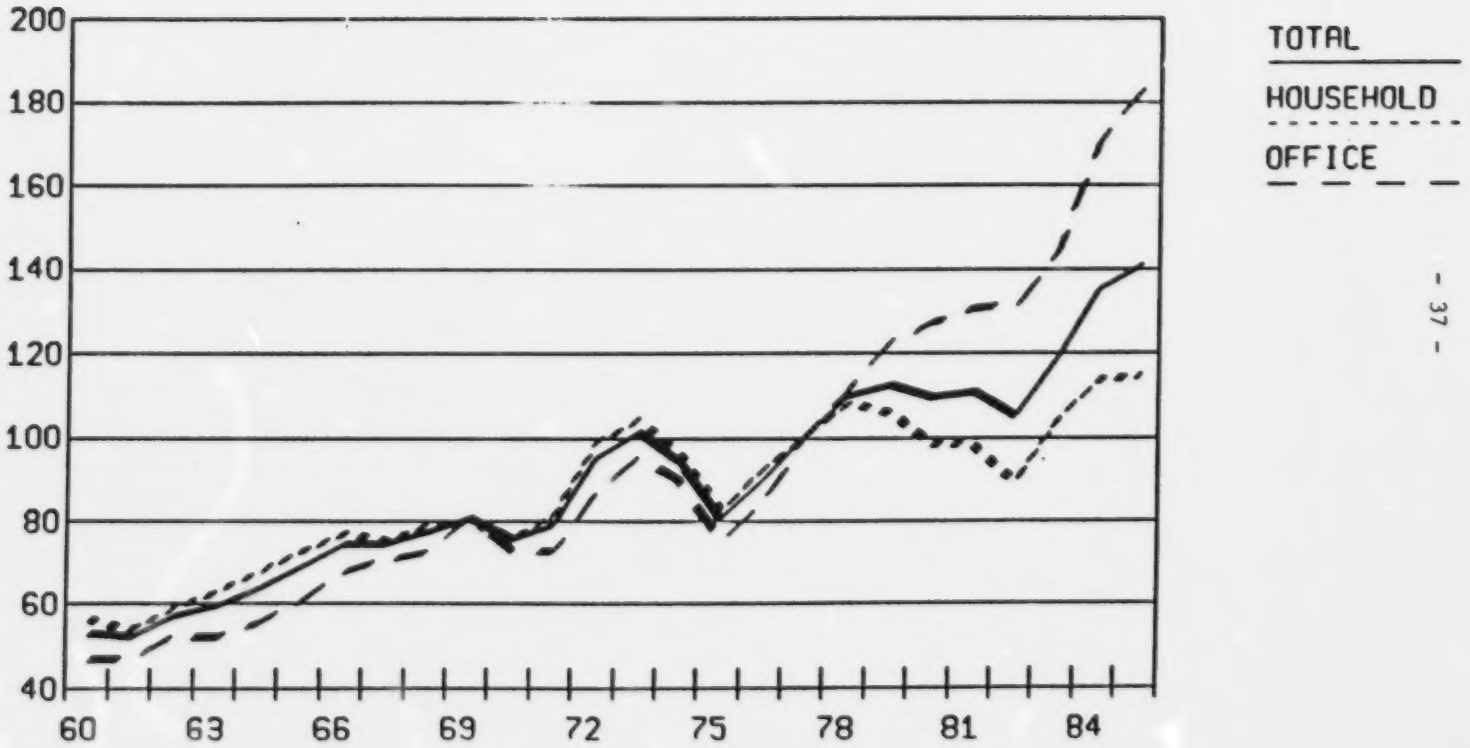


FIGURE 13 U.S. IMPORTS OF FURNITURE AND COMPONENTS
(MILLION CONSTANT 1982 DOLLARS)

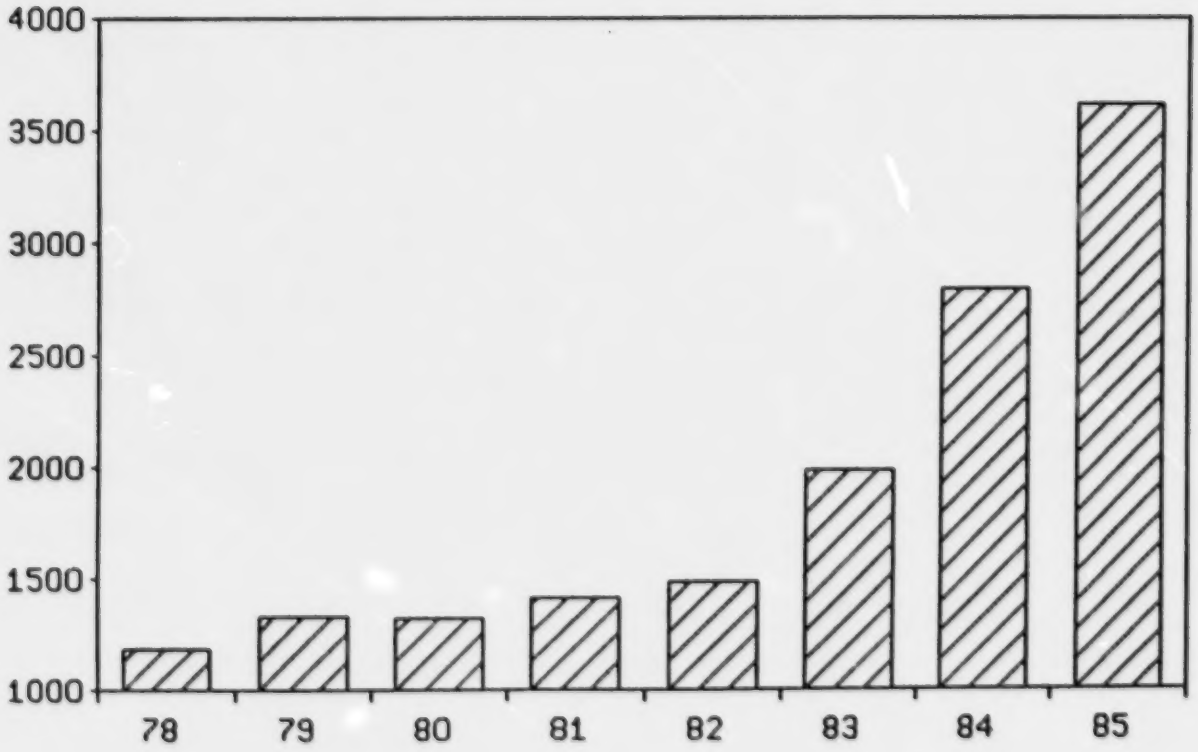


TABLE 6

UREA PARTICLEBOARD DEMAND
PRELIMINARY LONG-RUN FORECAST
(BSF, 3/4-INCH)

1976-1980	3.32
1981-1985	3.02
1982	2.56
1983	2.93
1984	3.28
1985	3.36
1986	3.51
1987	3.58
1988	3.75
1989	3.70
1990	3.37
1986-1990	3.58
1991-1995	3.77
1996-2000	3.99

TABLE 7

MDF APPARENT CONSUMPTION
HISTORY AND FORECAST

	HOUSEHOLD INDEX OF FURNITURE PRODUCTION (1977=100)	MDF USAGE (MMSF/INDEX)	CONSUMPTION (MMSF)
1980	98	4.9	480
1981	97	5.1	495
1982	89	5.3	472
1983	103	5.5	567
1984	113	5.7	644
1985	114	5.9	673
1986	119	6.3	750
1987	125	6.7	838
1988	130	7.1	923
1996-2000	154	9.0	1,386

furniture market. This growth is due, in large part, to the growth in demand for electronic furniture (i.e., personal computer tables, audio-visual storage and display sites, word-processing stations, copy stations). Figure 13 (US imports of furniture and components) demonstrates the considerable growth in imports of furniture that has occurred in the U.S. since 1978. There is speculation that in 1986 this figure will climb to $4 billion (US). The three primary exporting countries are Taiwan (19% of total imports), Canada (12% of total imports) and Denmark (6% of total imports). Although the strong import growth is partly a function of the strong US dollar, competitive advantages, and consumer preferences for foreign supplied goods are also playing a role.

Tables 6 and 7 provide the RISI forecast for urea particleboard and MDF to the year 2000. Particle board consumption is forecast to grow approximately 19% to 3.99 billion sq. ft. (3/4 inch basis) by the year 2000. MDF consumption is forecast to increase by 105% to 1.386 billion sq. ft. by the year 2000. This significant growth will be the combined result of i) forecasted growth in the aggregate market (Table 7, column A), and ii) more intensive use of MDF in furniture construction (Table 7, column B).

Conclusion:

The solid-wood products market in the US is rapidly changing in response to i) timber and other supply considerations, and ii) shifting market needs. An expected reaction to these evolving supply and demand based pressures is the development of alternative new wood-based products to substitute for traditional products. The common feature of most of these products is that they are reconstituted wood-fiber based commodities. Two of the more important products are particle board and medium density fiber board. Since the major users of particle board and medium density fiber board are furniture and cabinet makers, the rate of growth of consumption of PB and MDF will be a function of future furniture and cabinetry demand. Consumption of MDF by the year 2000 is forecast to grow 105% from 1985 level to a level of 1.386 (1/4" basis) billion sq. ft. Consumption of particle board by the year 2000 is predicted to grow 19% (from 1985 levels) to a level of 3.99 (1/4" basis) billion sq. ft. Currently there is a significant gap between domestic consumption and domestic production of furniture in the U.S. This gap is being filled by imports from foreign countries. The three most prominent importers are Taiwan, Canada, and Denmark. RISI expects that much of the increase in future consumption of particle board and MDF will be supplied by importers primarily Canada.

SESSION V: RISI OUTLOOK PRESENTATIONS

PULP AND PAPER OUTLOOK

Printing and Writing Papers

John D. Maine
Vice President, Printing and Writing Papers
Resource Information Systems, Inc.

Introduction:

This presentation will provide short-, medium-, and long-term forecasts for the newsprint, coated, and uncoated paper industries.

Analysis:

Newsprint

To date, newsprint demand has been outperforming all expectations. Through 1986, consumption is up 3.6% in spite of a sluggish economy. July's consumption of 12.3 MM tonnes set a new record and is up 7.3% over 1985. If consumption remained at the July level for the rest of the year, consumption would show a dramatic 4.8% jump for 1986. For the second half of this year, however, weaker consumption levels are forecast: A plateau has been reached in real estate and classified ads. There has also been a rapid escalation in real ad rates. And finally, newsprint will lose some market share to super calendered (SC) and light-weight coated (LWC) papers. As a result, newsprint consumption will grow only 2.5% in 1986. Newsprint inventories will drop 100 M tonnes this year as expected.

Inventory levels still remain high compared to the historical drop to 35-38 days under similar market conditions. It is felt that inventories will bottom in early 1987 at 41 days. This drop is in part responsible for the market weakness in the third and fourth quarters of 1986.

For the period 1987 to 1990, demand growth will be modest (Figure 14). Advertizing growth will moderate in reaction to high ad rates and a slowdown in the real estate boom. During this period, grade competition will intensify as new SC capacity comes on line and catalogs and retail inserts upgrade to SC or LWC. It is projected that US demand will reach 12.7 MM tonnes by 1990 -- an average growth rate of 2% per year.

Over the long-term (i.e. to 2000), prospects for newsprint growth will be low. Historically, circulation has declined and very little future growth is expected. Advertizing, the major source of demand growth in the 1970's, will peak as insert advertising growth matures. The role of electronic media in the 1990's will also have a slowing effect. One final factor, grade competition, will heighten as upgrading to SC or LWC occurs. Thus, the US newsprint demand is forecast at 14.4 MM tonnes in the year 2000. This represents 1.5% annual growth. Improved newsprint may see some higher growth but it will come at the expense of standard newsprint.

World newsprint demand (excluding North America) outperformed the US in 1985. Rates of growth for different regions were: Europe = 1.0%; Asia (excluding Japan) = 9.5%; China = 38%; Japan = 1.3%; and Latin America = 7.2%. The long term growth potential is much higher than in the US, particularly in developing countries due to increasing literacy, less grade competition, higher population growth, and higher economic growth. The largest demand growth will occur in Asia (Table 8).

FIGURE 14

U.S. NEWSPRINT CONSUMPTION PER BILLION DOLLARS OF GNP

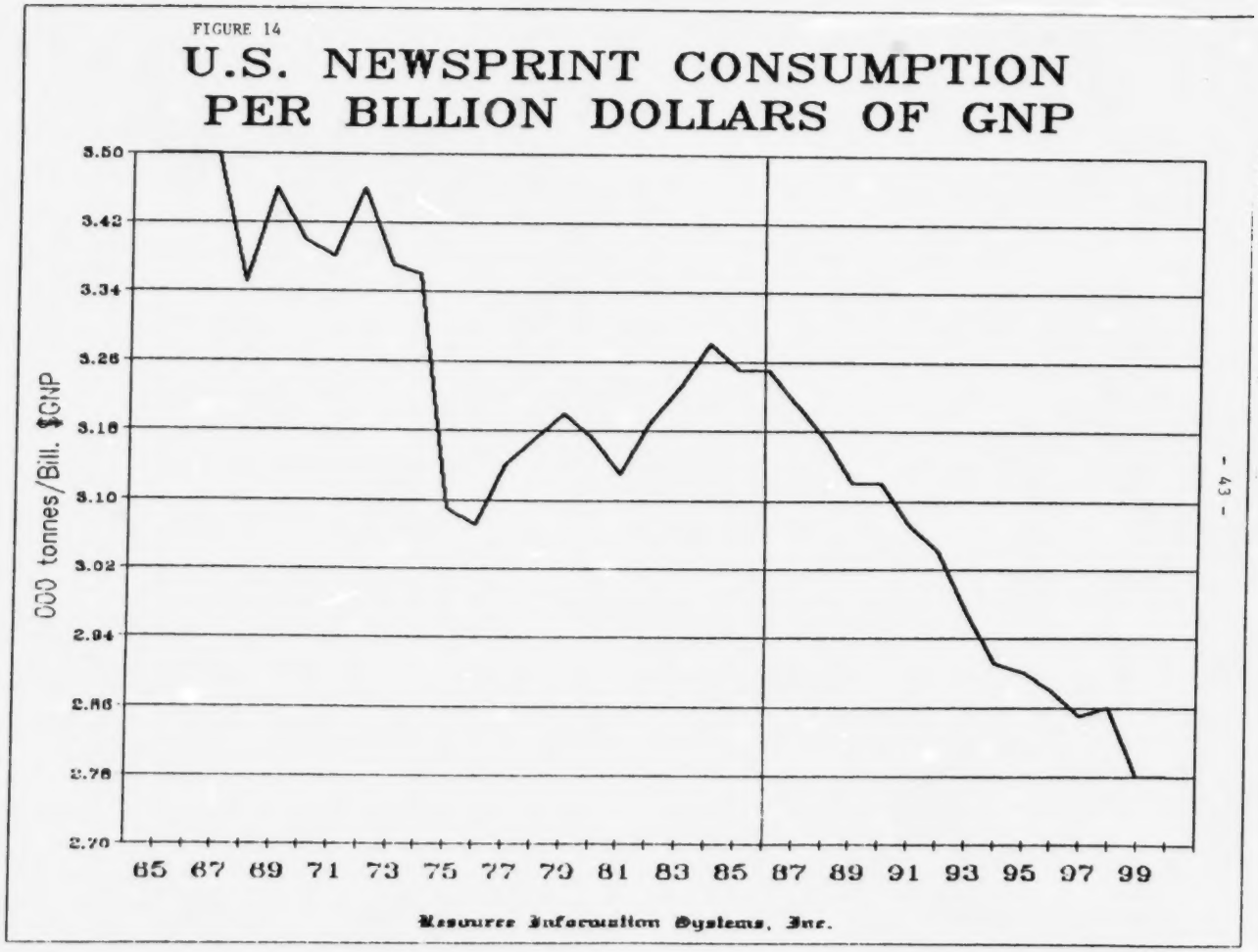


Table 8. Average annual newsprint demand growth through the year 2000.

Region	Growth (%)
United States	1.5
Europe	1.3
Japan	2.3
Other Asian countries	5.9
Brazil	4.9
Other Latin American countries	4.5
Africa	3.5
Oceania	2.8

In spite of demand growth overseas, North American export opportunities will be limited. Africa will soon become a net exporter; Latin America is becoming more self sufficient and is very cost competitive; and low European demand will be offset by increased capacity. Asia presents the only export growth opportunity, but even there, growth will be limited by increased capacity in Oceania and Asia. Consequently, exports are forecast to rise moderately to 1.7 MM tonnes by 1990 which is below the 2.0 MM peak of 1981.

US imports from overseas producers will stay high and even rise further in the late 1980's. The Scandinavians are currently looking for longer term contracts in an attempt to remain in the US market. As well, new Scandinavian capacity is being developed, a portion of which is destined for the United States. It is also projected that by the 1990's new tonnage from Latin America and/or South Africa will penetrate the US market. In sum, imports are expected to rise from 330 M tonnes in 1985 to 400 M tonnes by 1988 with the potential of reaching 700 M to 1 MM tonnes during the 1990's.

For 1986, operating rates will be 93-94% of capacity which is in direct response to good demand growth. Operating rates are projected to improve to 95% in 1987 and to 97-98% in 1988 to 1990. These higher rates are the result of a lack of recession until 1990, some pick-up in overseas exports associated with the declining US dollar, and past conservative capacity growth due to poor profitability, poor demand outlook, and the potential for overseas imports to again undercut US pricing. Lower operating rates will prevail in the first part of the 1990's. A post-recession price recovery will spur some North American capacity growth, however, it will be tempered by new capacity in Sweden, Latin America, and possibly Africa.

Margins are defined as the US contract sales price divided by the total unit costs at normal operating rates. The poor margins of 1982-83 were followed by a strong recovery in 1984-85 (Figure 15). This recovery has been most pronounced for Canadian producers due to exchange rates and productivity gains. Margins on spot sales, however, have remained lower. Canadian and US margins will rise slightly in 1986 due mainly to a 3.5% drop in costs. At the same time, Scandinavian margins will plummet. Margins will continue to show significant gains to 1990 as operating rates approach 100%. It must be pointed out the North American newsprint margins will be poor relative to other paper grades and will remain too low to justify investments in new capacity.

FIGURE 15

THE RATIO OF PRICE TO TOTAL COSTS FOR THE U.S. SOUTH, QUEBEC, AND SWEDEN

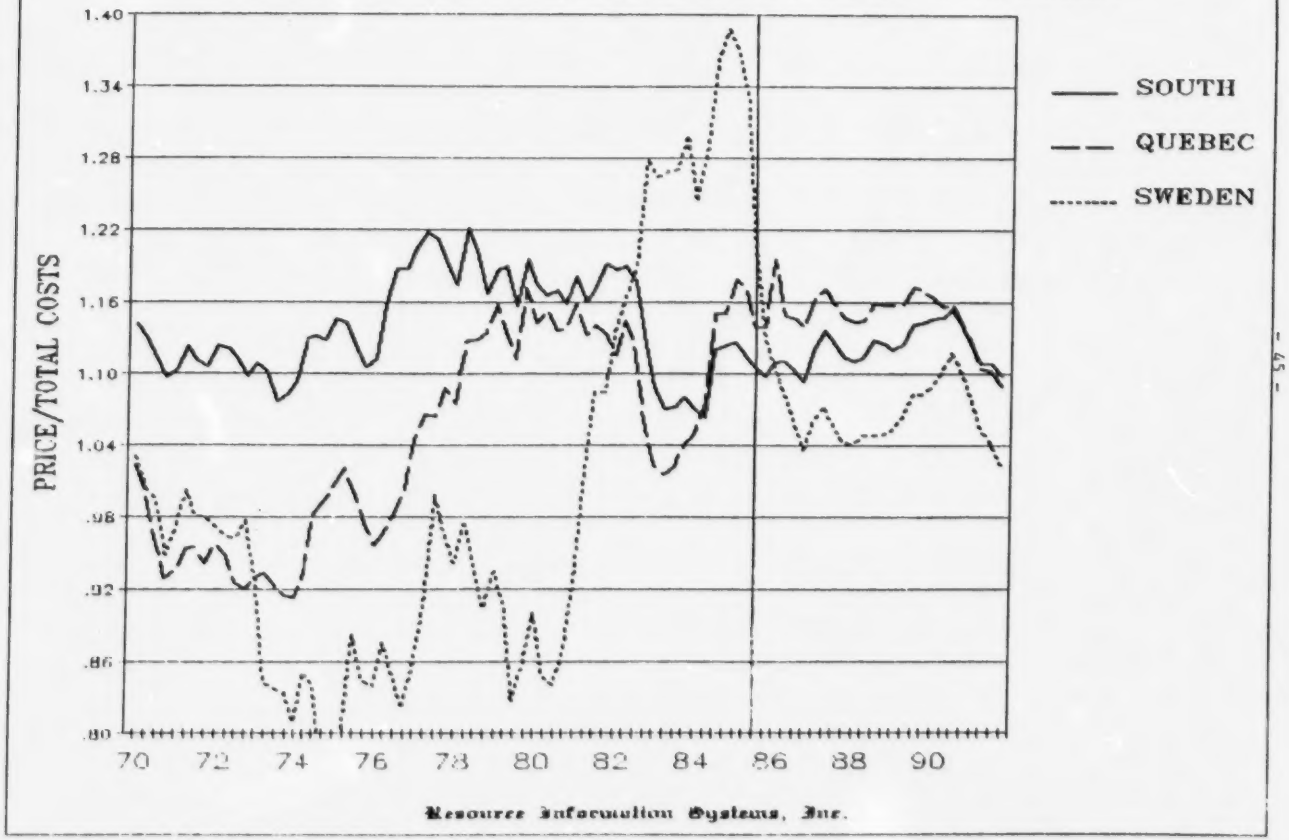
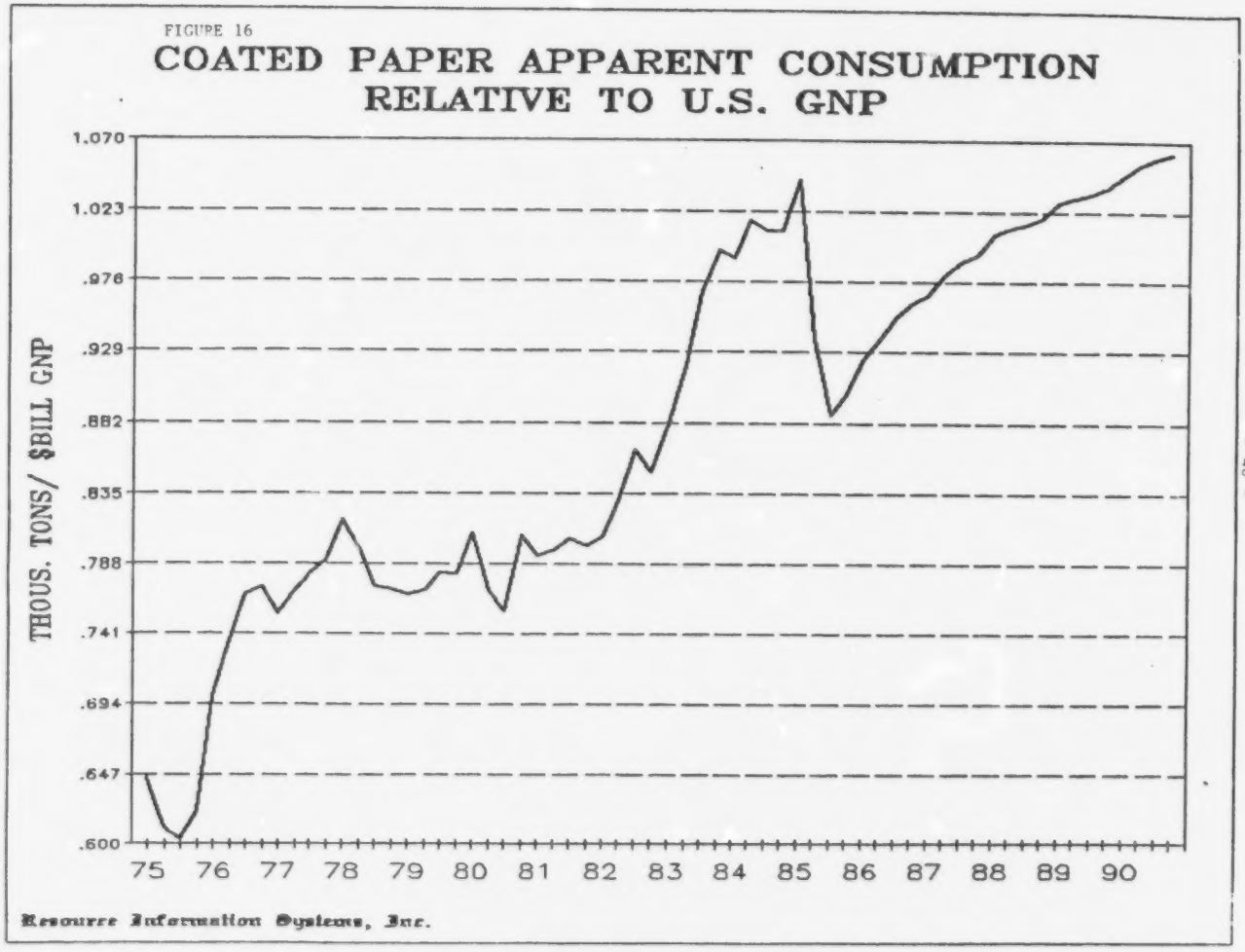


FIGURE 16

COATED PAPER APPARENT CONSUMPTION RELATIVE TO U.S. GNP



Printing and Writing Papers

Printing and writing papers experienced a downward correction in 1985 relative to GNP. This was part of a normal cycle and a recovery is already well underway. The long-term determinants of printing and writing growth continue to be positive. These include a proliferation of computers and copiers, strong demand for print media advertizing, and competitive paper prices which will encourage higher demand and lessen the incentive to conserve paper. It is felt that the negative impacts of electronic media will not surface in this decade. Thus, printing and writing demand will grow from 19.2 MM tons in 1985 to 32.4 MM tons by the year 2000, an average growth rate of 3.5%.

Coated paper went through a large cycle in 1984-85 (Figure 16). In 1985, demand dropped 4.7% after rising 30% in 1983-84. A strong recovery began in late 1985 and is expected to continue through 1986. A big jump in demand growth will come in 1987 and 1988 when apparent consumption rises 7.6%. It is expected that demand will rise from 6.5 MM tons in 1985 to 8.7 MM tons by 1990.

Coated paper imports hit a new record of 500 M tons in 1985 and will show only a modest decline to 470 M tons in 1986. European imports will drop a little but new capacity there will force European producers to stay in the US market even if they have to take a sharp reduction in profitability. Canadian coated imports will remain level through the first half of 1986 and then increase once the new Repap machine comes on line. Japanese imports will hit a new record this year in spite of the huge increase in the Yen due to large over capacity in Japan. The net result is that imports will continue to rise and reach 770 M tons by 2000.

It is forecast that over capacity in coated papers will persist through early 1988 as high demand growth will be met by high capacity growth. Due to this over capacity, margins will go through a three-year downward correction from 1986 to 1988 (Figure 17). A lull in capacity growth late in 1988 will permit a modest margin recovery but margins will not return to their 1984-85 levels.

Over the long-term, demand growth for coated paper is forecast at 3.9% per year. This rise is due to high growth in advertising, an increased desire for quality color printing, and technological improvements in sheet quality and cost.

Unlike coated papers, uncoated freesheet demand did not go through a downward correction in 1985 but rather continued to be a strong growth market (Figure 18). Seasonally adjusted uncoated freesheet demand peaked in the first quarter of 1986 and there are no signs of a drop in demand as year-over-year growth remains impressive.

Uncoated freesheet imports are recovering sharply in response to higher US prices and imports will continue to set new records in the coming years. For 1987, import growth will be minimal as new US capacity comes on line and European over capacity drops. Imports will begin to rise substantially in 1988. This will be due to a combination of tighter US markets

FIGURE 17

COATED PAPER UNIT MARGINS AT A NORMAL OPERATING RATE

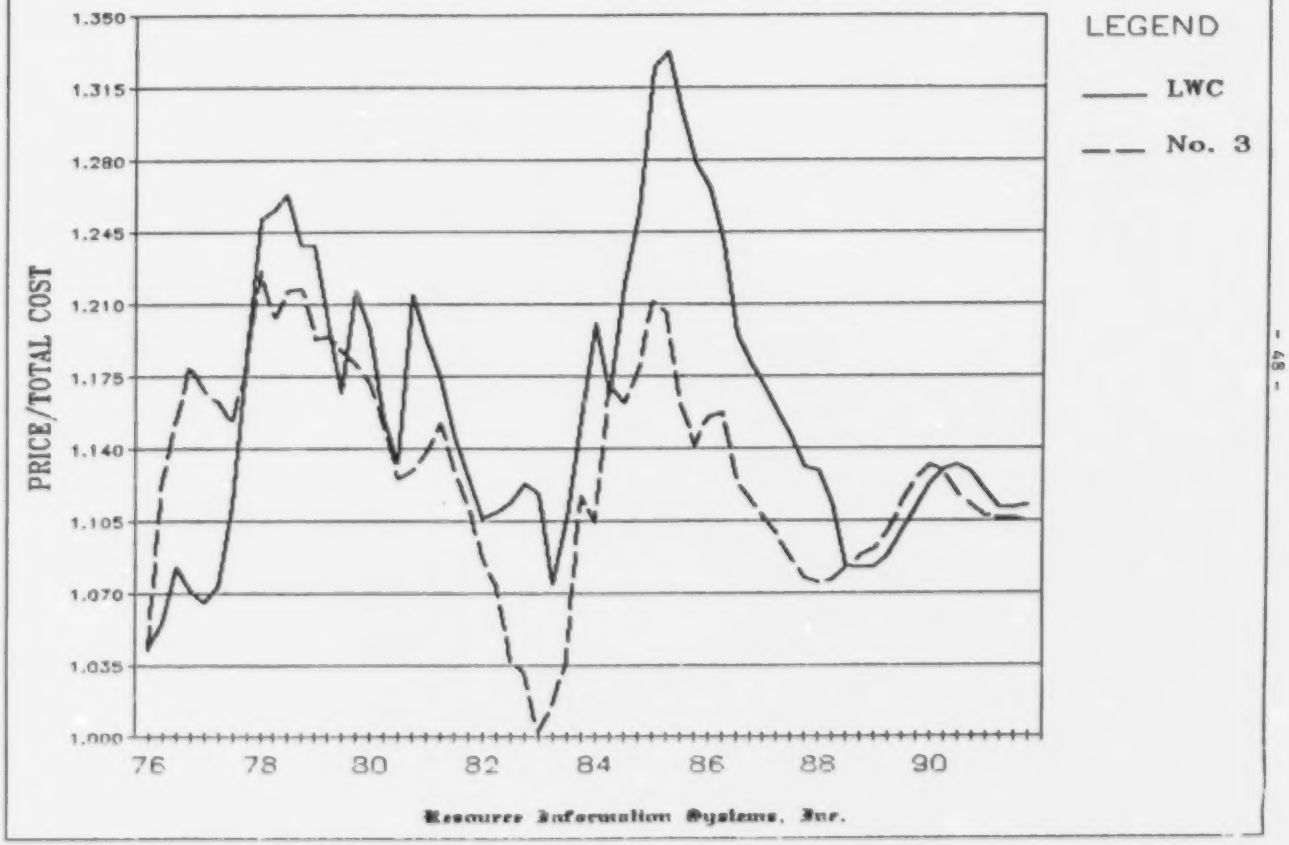


FIGURE 18

UNCOATED FREESHEET APPARENT CONSUMPTION RELATIVE TO U.S. GNP

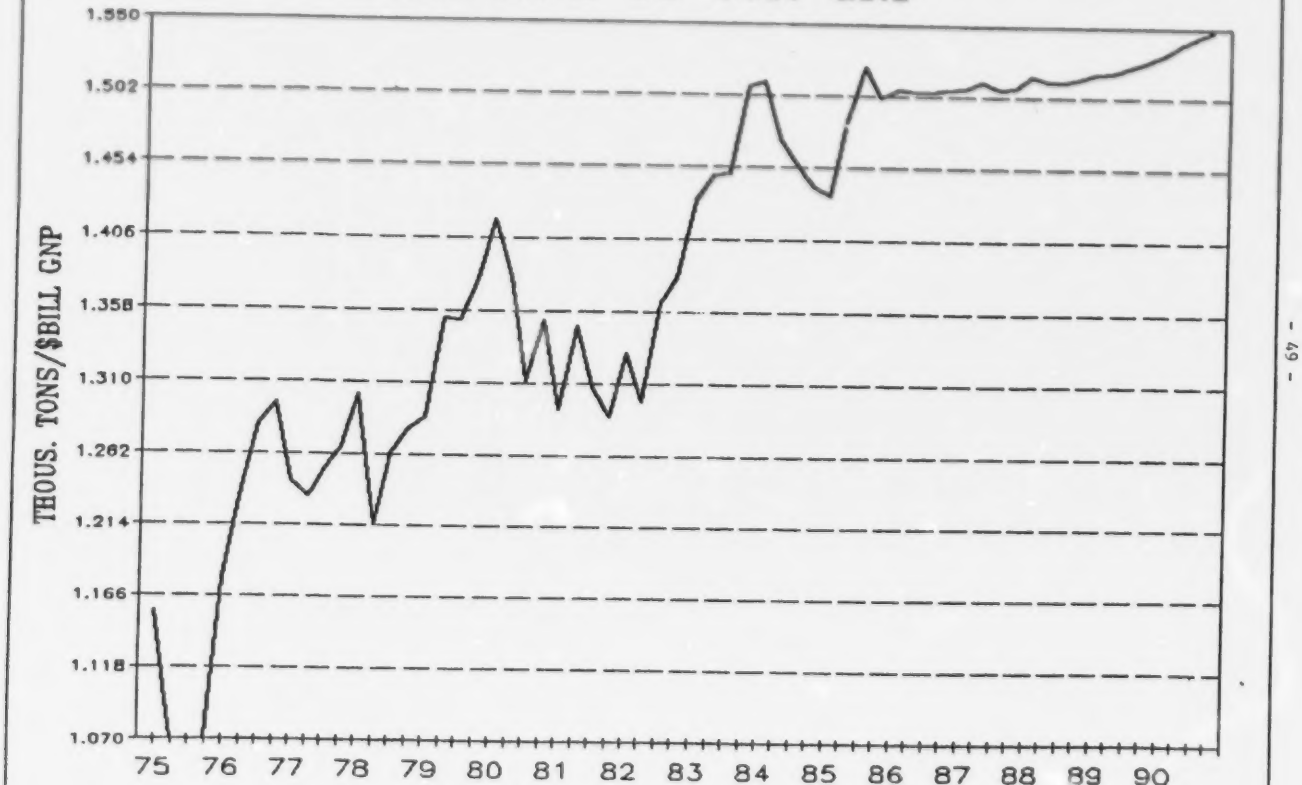
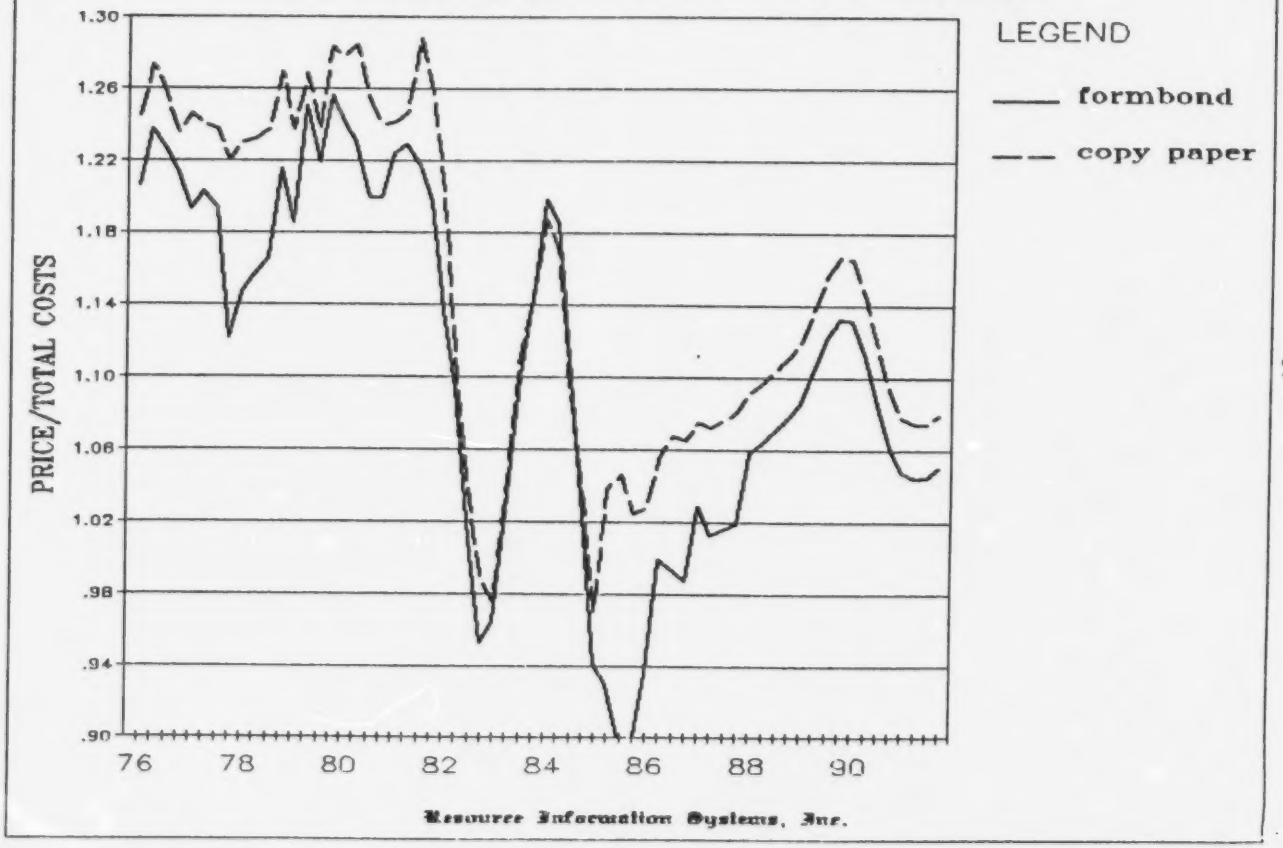


FIGURE 19

UNIT MARGINS AT NORMAL OPERATING RATES FOR FORMBOND AND COPY PAPER



and new Canadian capacity destined for the US market. During the 1990's, imports are projected to rise over 1 MM tons due primarily to the conversion of Canadian pulp mills and the development of Latin American capacity.

Uncoated freesheet operating rates will be reasonably good in 1986-87. During this same period, capacity growth will be 8.2% after which it will rapidly slow down as the opportunities for further upgrades of market pulp capacity become limited. Many of the current planned additions are the result of money-losing market pulp mills being upgraded. This would not have occurred without the devastation of pulp prices. Thus, a slowdown in capacity growth will allow operating rates to return to 94% in 1988 and 96% in 1989.

Long-term uncoated freesheet demand growth will continue to be strong. This is a reflection of strong growth in personal computers; healthly growth in commercial printing; low paper prices which are inducing stronger demand growth; and increasing copier markets, particularly the small, low speed models. Projections are for uncoated freesheet demand to exceed economic growth by an average of 0.7% per year through the year 2000. During the 1990's, however, demand growth will be much more modest than the 1980's.

Margins for uncoated freesheet will show a big improvement from 1986 to 1989 (Figure 19). These margins, however, will not return to the peak levels attained in the late 1970's and in 1984 for several reasons: Paper capacity is readily available and new capacity is coming on line; new low cost mills will keep margins down for less efficient older mills; and pulp prices are expected to rise.

Conclusions:

The next three to five years will a be most interesting and dynamic period for the newsprint and printing and writing paper industry as excellent opportunities for growth exist. From 1990 to 2000, however, this industry will be challenged by increasing overseas competition, an abundance of capacity, and potential shift to the increased use of electronic media.

Packaging Paper and Board

Kenneth Waghorne
Senior Economist, Resource Information Systems, Inc.

Introduction:

This discussion will focus on future market conditions for the fiber box, containerboard, boxboard, and kraft paper industries.

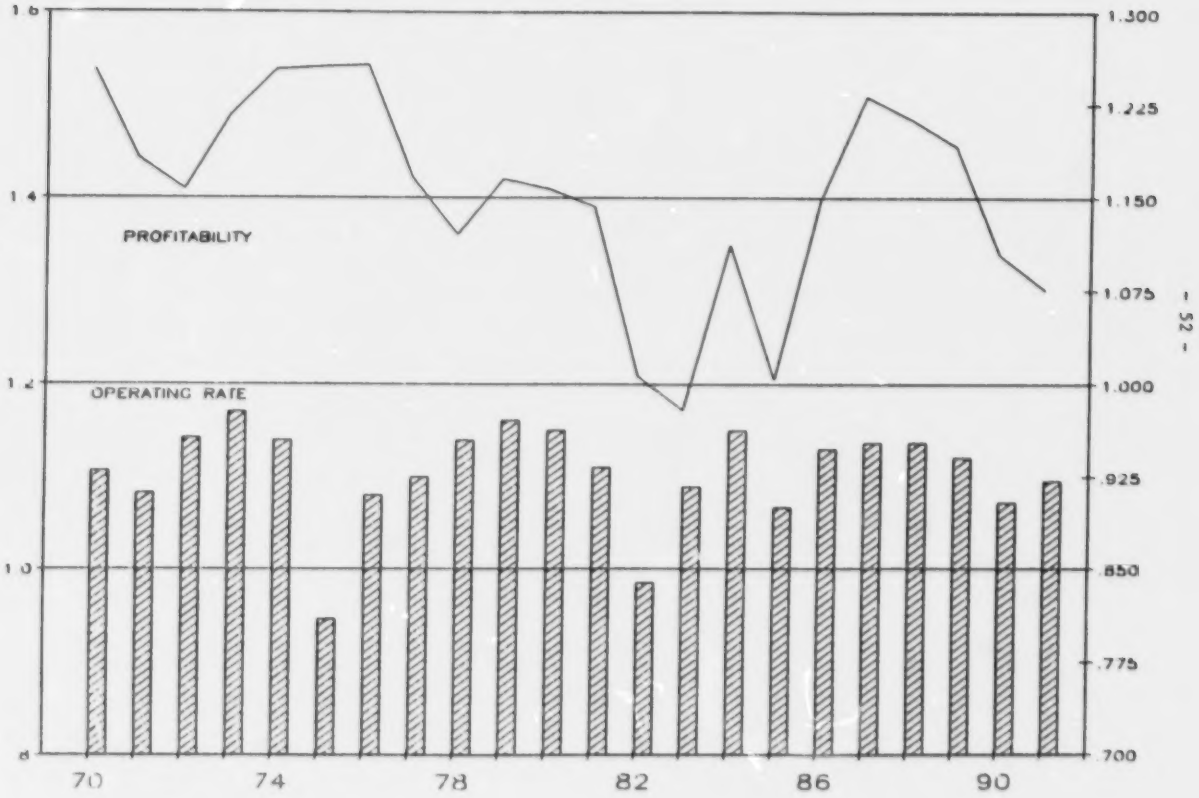
Analysis:

Fiber Boxes

During the first half of 1986, corrugated box demand rebounded despite weak industrial production. The driving factors were a strong consumers goods market and inventory building. For all of 1986, however, box

FIGURE 20

UNBLEACHED KRAFT LINERBOARD PROFITABILITY AND OPERATING RATE



shipments are forecast to moderate to 4% as shipment growth slows in the second half and inventory drawdown occurs. For the period 1987 through 1989, demand is projected to be growing in response to i) accelerating industrial production; ii) a lack of penetration by substitutes; and iii) limited changes in box construction.

Containerboard

Containerboard markets have improved dramatically from the 1985 lows. This improvement is a direct result of strong fiber box demand, a surge in exports, and a plunge in inventory levels. It is expected that total production will increase 6% in 1986 and climb further in 1987. This demand growth should remain steady through the late 1980's. Such consistent performance is based upon consistent fiber box growth, limited changes in box construction, and steady export markets. Two negative factors, reviving capacity expansion and renewed export competition, may detract from these growth projections.

Due to the shutdown of some mills, operating rates climbed rapidly in 1986 to approximately 95% for unbleached liner. This compares to a 90% average for 1985. For 1986, containerboard margins will soar to peak levels by year-end (Figure 20). High operating rates, low inventory levels, and declining production costs will be responsible. Margins will begin to slip gradually in the late 1980's as capacity increases faster than demand and costs start rising once again.

Boxboard

Improvements in consumer spending have caused folding boxboard markets to rebound this year. Growth in the second half of 1986 will slow yet the total annual production should climb approximately 6%. In spite of an improving economy in 1987, folding boxboard will remain stable due in large part to basis weight reductions and increased competition from plastics.

Bleached folding boxboard gained some share from recycled folding boxboard in early 1986 (Figure 21). This share will slip in 1987 due to a relative increase in costs to manufacture bleached folding. Demand for most other boxboard grades shows slower growth as plastics continue to penetrate the market.

Export markets have revived in early 1986 (Figure 22). Growth in export markets will be sustained by a lower US dollar, economic acceleration overseas, and increasing US capacity which is projected to rise by 300 M tons from 1985-1987 (primarily bleached board).

Rapid demand growth caused bleached board operating rates to jump from 91% in 1985 to 95% in early 1986 (Figure 23). These rates will decline slightly in 1987 as demand slows and new capacity comes on line. In 1986, bleach board margins will increase due to higher operating rates, lower producer inventories, and a rebound in the pulp market. Margins are forecast to stabilize in 1987 as operating rates decline and production costs increase.

FIGURE 21

SHARES OF FOLDING BOXBOARD BY FURNISH

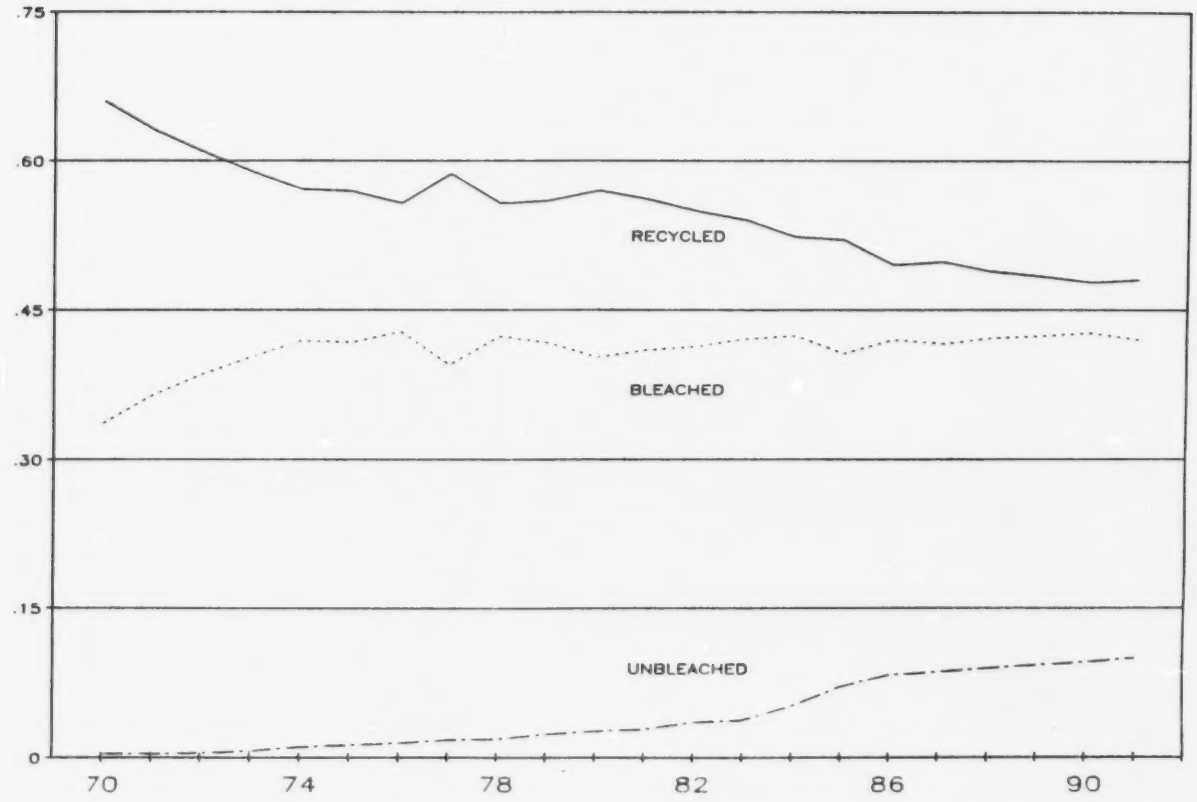


FIGURE 22

BLEACHED BOARD EXPORTS AND EXPORT SHARE OF TOTAL PRODUCTION

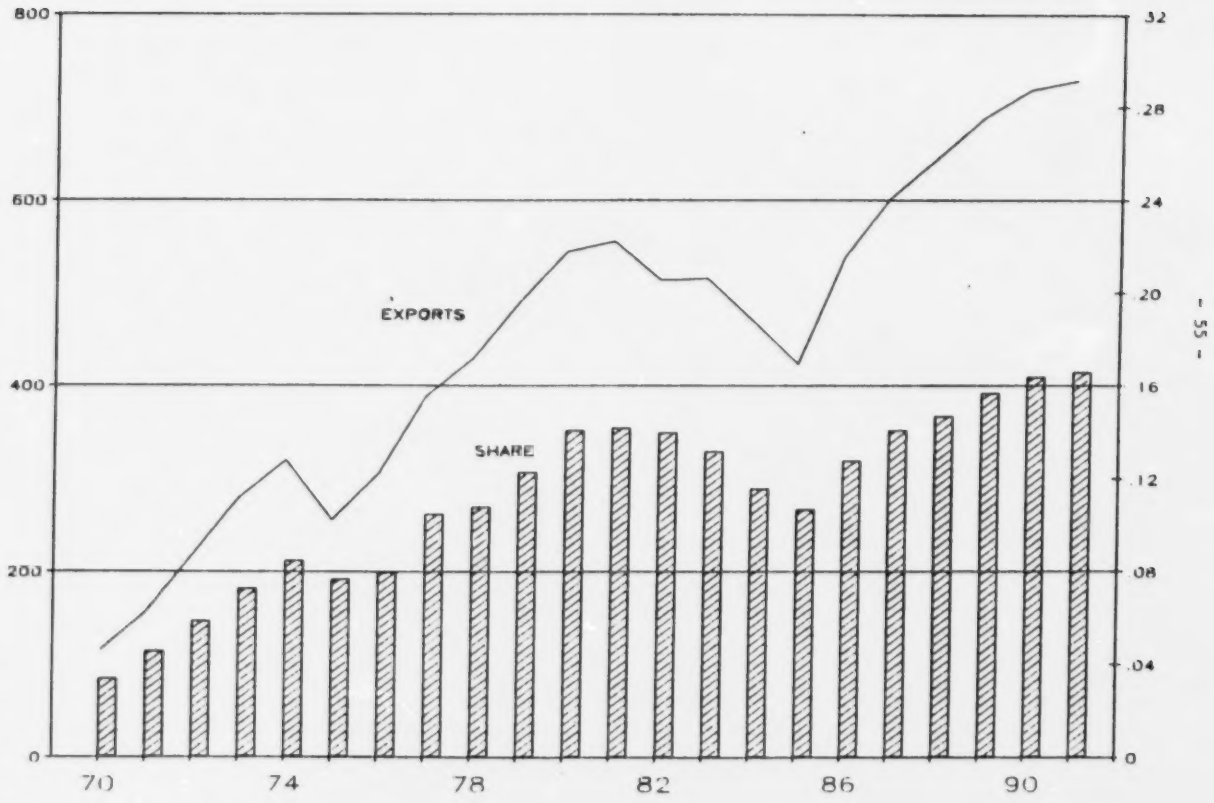


FIGURE 23

BLEACHED BOARD PROFITABILITY AND OPERATING RATE

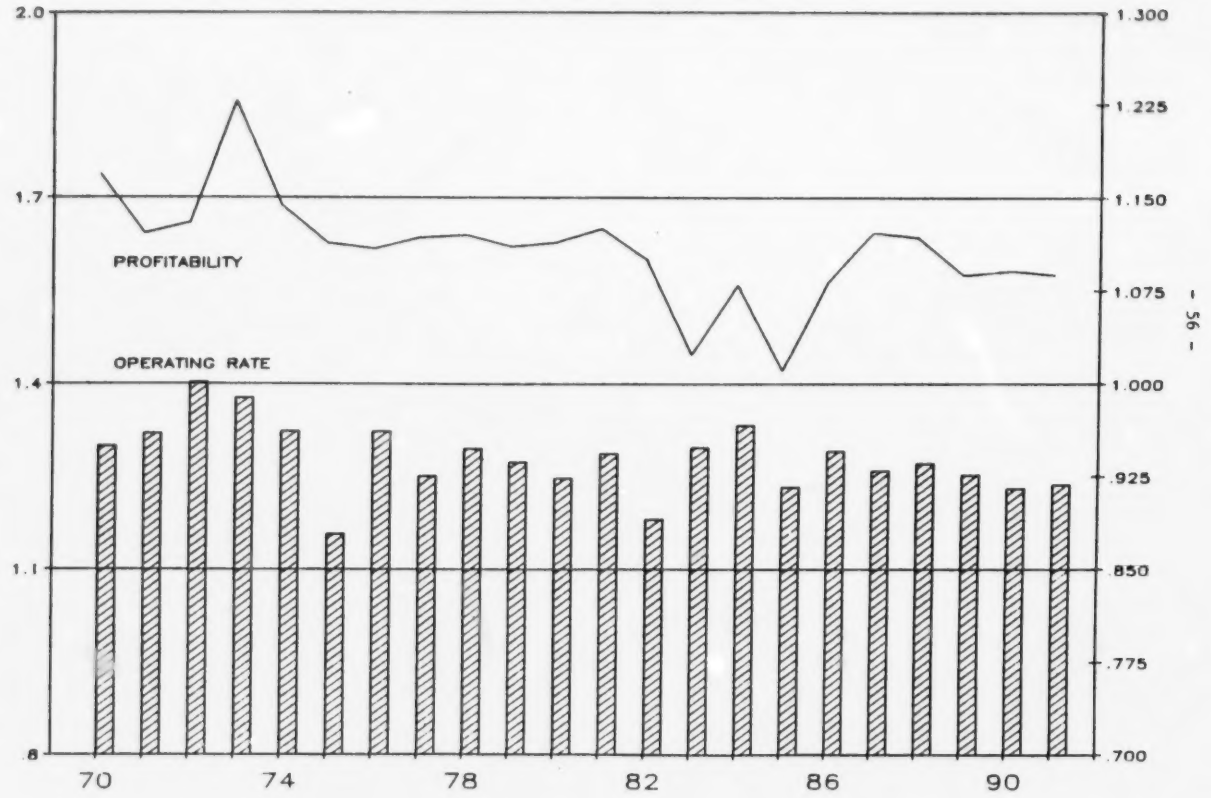


FIGURE 24

UNBLEACHED KRAFT PAPER SHIPMENTS, CAPACITY, AND OPERATING RATE

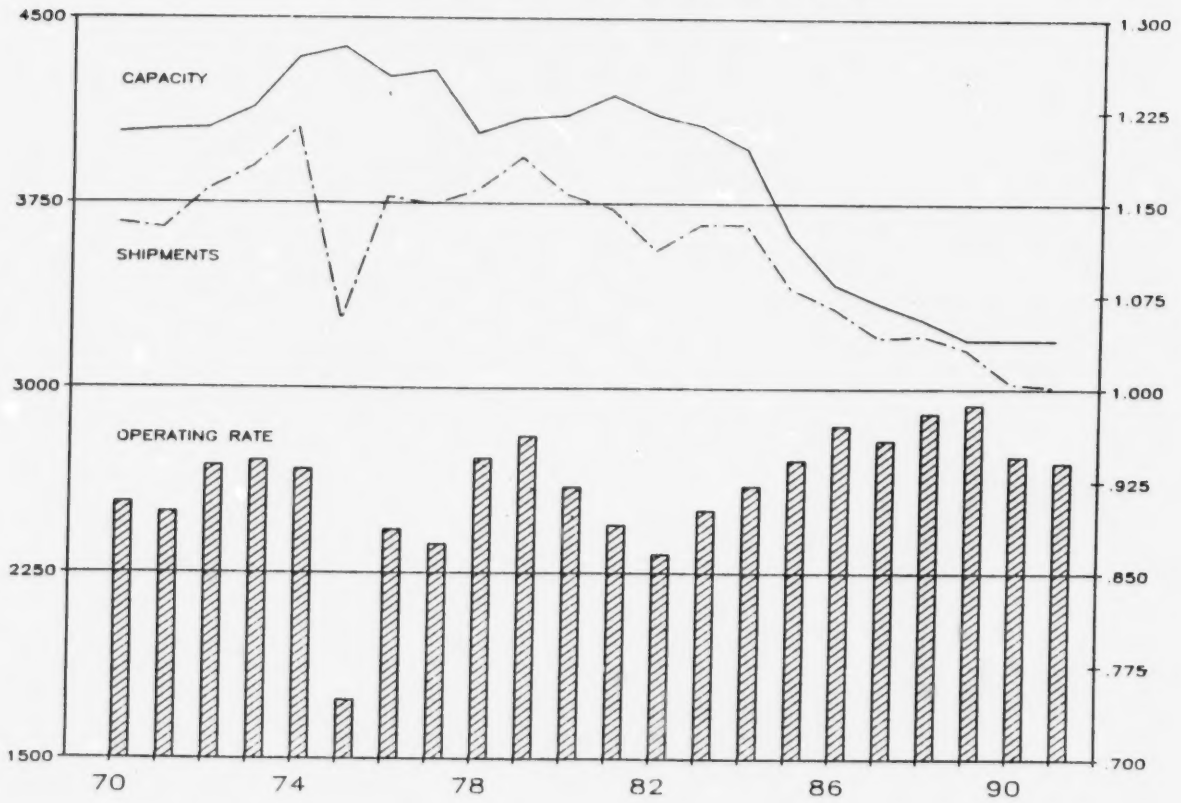
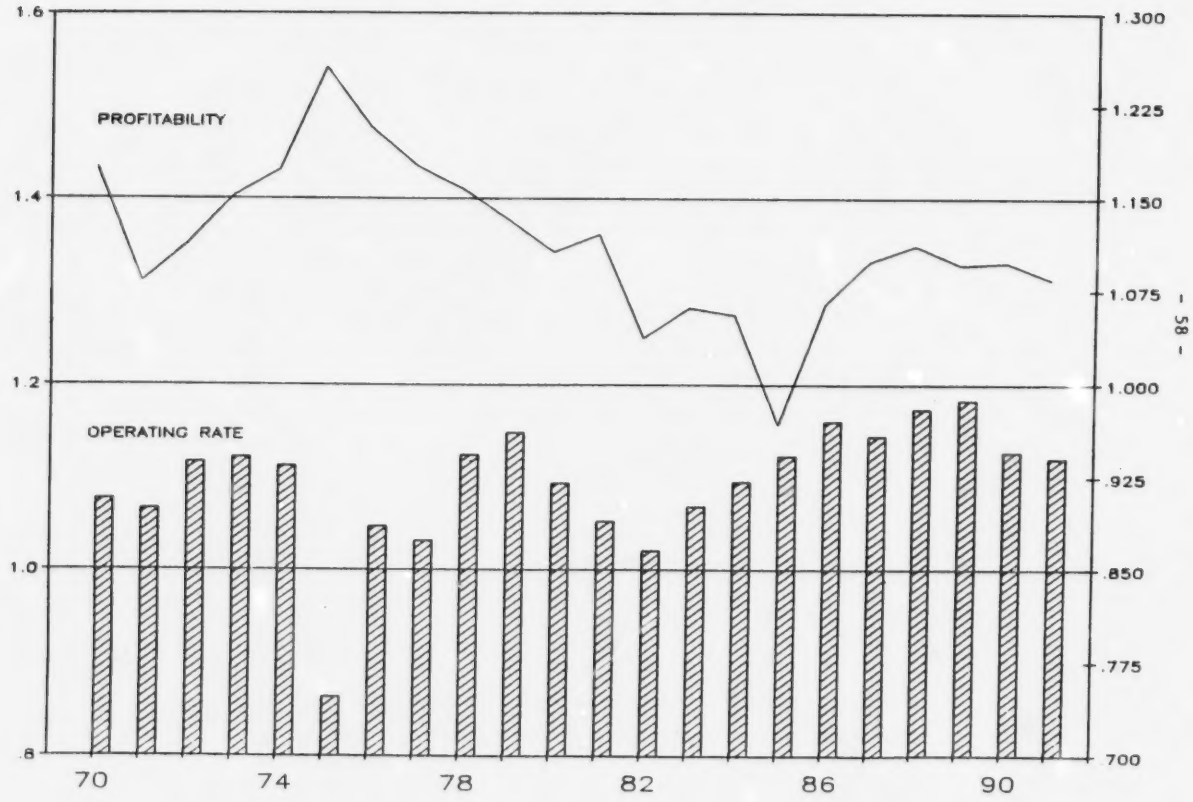


FIGURE 25

UNBLEACHED KRAFT PAPER
PROFITABILITY AND OPERATING RATES



Kraft Paper

Kraft paper shipments climbed in the first half of 1986 from the low year-end values of 1985 (Figure 24). This growth was led by increases in grocer's bags which were up an astounding 32%. Over the second half of 1986, however, total shipments will fall due to sharp inventory reductions. For the year, total shipments are projected to drop by 2% after falling 7% in 1985. This reflects the continued substitution of plastics. Demand is forecast to slip further in the late 1980's but not as rapidly as in the 1980-1985 period as plastic penetration slows.

Unbleached capacity will continue to drop with demand. A decline of 500 M tons is forecast for 1985-1987. Those mills which do not close will see their operating rates rise towards 100% (Figure 25). In 1986, kraft paper margins will climb sharply in response to high operating rates, low producer inventories, declining costs, and a tight, unbleached market. Through 1987-1990, margins will remain close to the 1980 level as capacity withdrawals will keep operating rates high.

Conclusions:

Forecasts were made for the packaging paper and board industry. While the outlook for fiber box and container board industries is good, the boxboard and kraft paper industries, however, will continue to be hurt by the substitution of plastics.

World Market Pulp

Rod Young
Vice President, Pulp and Paper
Resource Information Systems, Inc.

Introduction:

This presentation will focus on world market pulp projections through the 1990's.

Analysis:

World market pulp demand will rise between 5% and 6% in 1986. This increase is a result of i) an upswing in US and European paper markets; ii) substitution of imported pulp for domestic supplies in Japan; iii) continued strong growth in Asia; and iv) inventory building by papermakers. World demand for chemical grade market pulp will reach 26.8 MM tons in 1986 and represent 19.5% of the total world pulp demand. This strong demand growth has coincided with supply restrictions caused by voluntary Scandinavian downtime in early 1986, the withdrawal of US integrated producers, and the British Columbia sawmill strike. In response, NorScan producer inventories dropped to a seasonally adjusted level of 1.07 MM tons in July. This compares to 1.35 MM tons at the end of 1985 and a peak of 1.83 MM tons in March, 1985. Profitability has responded strongly to these tighter market conditions -- three increases in dollar pulp prices in 1986 and a fourth recently announced.

FIGURE 26

GROSS MARGINS ON BSKP (DEL. TO N. EUROPE) FOR SWEDEN, B.C. COAST, U.S. SOUTH

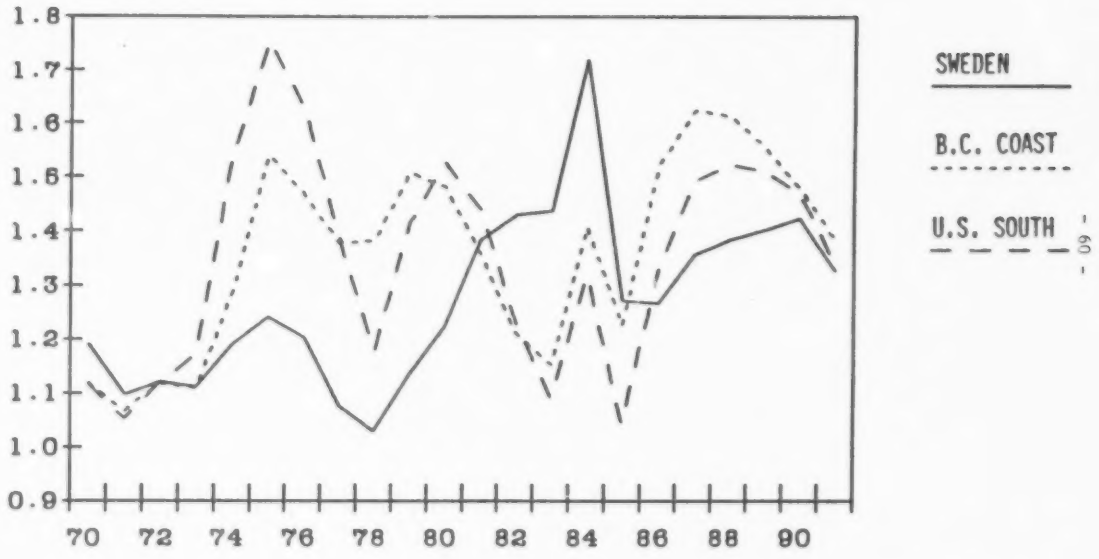
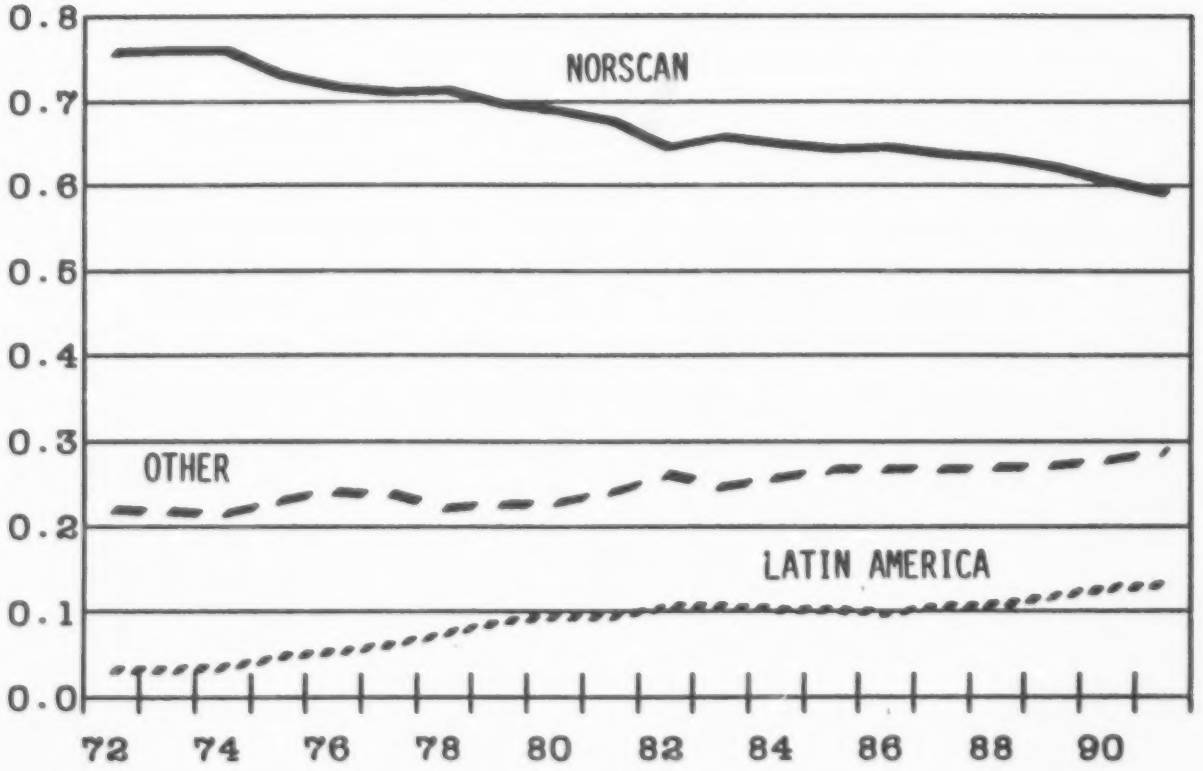


FIGURE 27

DISTRIBUTION OF WORLD CHEMICAL PAPER GRADE MARKET PULP SUPPLY



World market pulp demand should continue to show good growth through 1987-1989, hitting 30 MM tons before the next recession-induced drop in 1990-1991. This growth will be fueled by solid general economic expansion, printings and writings rising faster than general economies on a worldwide basis, tissue papers rising faster than general economies outside of North America, fluff pulp demand growth outside Europe and North America, continuing substitution of imported pulp in Japan, and strong Asian demand.

Pulp producers are not prepared for this sustained demand growth as capacity expansion plans are minimal for the second half of this decade. Thus incremental expansion at existing mills and robust chemi-thermo-mechanical pulp (CTMP) capacity growth will keep market pulp operating rates at an average of 95% from 1987 to 1989. Consequently, a good profitability environment is projected over the next three years (Figure 26). Profit margins will rise to the peak levels seen in 1974 and 1984.

In response to increased profitability, large increases in capacity will be forthcoming in the first half of the 1990's. This capacity will be concentrated in nontraditional regions pushing NorScan producers into a market share of under 50% by the end of this century (Figure 27).

Conclusions:

The outlook for world market pulp is quite promising. Increased demand, constrained near-term supply, and improved profitability will result in large capacity expansion by 1995. Most of this expansion will arise from nontraditional regions at the expense of NorScan market share.

FORSIM OUTLOOK

Johan J. Veltkamp
President, Resource Information Systems, Inc.

Housing and the General Economy

Introduction:

This presentation was divided into 2 parts. In the first part, various economic variables including GNP, housing starts, inflation, and interest rates were forecast to the year 1988. A number of policy considerations were discussed with respect to potential impacts on the development of the US economy. Specifically, the Gramm-Rudman Act, tax reform legislation, and monetary policy were reviewed. Finally, potential risks to the realization of the forecast were identified. The second part looked specifically at trends in housing starts to the year 2000 and at trends in the housing market in general (i.e., trends in house size, remodelling, vacation home's).

TABLE 9

U.S. ECONOMY

	1985	1986	1987	1988
GNP (REAL % CH)	2.7	2.6	3.0	3.6
CONSUMPTION (REAL % CH)	3.5	3.9	2.6	3.1
INDUSTRIAL PRODUCTION	2.3	0.6	3.2	6.5
MERCH. TRADE DEF. ($BIL.)	122	160	115	60
HOUSING STARTS (MILS.)	1.74	1.91	1.84	1.78
PRICES:				
CONSUMER (% CH)	3.2	2.0	3.6	3.8
PRODUCER (% CH)	0.9	-1.3	3.0	4.5
INTEREST RATES:				
FED FUNDS	8.1	6.5	5.3	6.6
30-YEAR T-BOND	11.0	7.9	7.0	7.5

Analysis:

US Economy to 1988:

Table 9 (US Economy) describes anticipated changes in key economic variables in the US economy to 1988. This period will be a period of sustained economic growth with real GNP growth rates increasing to 3.6% in 1988. Housing start's, however, will not reflect this growth in the economy. Total housing starts should peak in 1986 at almost 2 million and decline to about 1.8 million by the end of 1988. Interest rates are expected to decline to levels that, in real terms, were experienced in the 1950's. The critical considerations for a realization of this forecast include the Gramm-Rudman Act, Tax Reform legislation, and direction of monetary policy.

The Graman-Rudman act stipulates that the federal government deficit in the US is to be reduced to zero by the year 1991. There is, however, a safety valve. The act can be disregarded if real GNP declines for two successive quarters. The RISI forecast of the US economy assumes that in reaction to the Act, the federal deficit will fall to 2-3% of GNP by 1990 as opposed to 5% (which it is now).

US tax reform is being directed at two sectors the business sectors and personal taxes. Proposed changes concerning business taxes include elimination of capital gains tax; elimination of investment tax credits, longer write-off periods for buildings, and a lower overall tax rate. Personal income tax changes include mortgage interest expense remains deductible; interest on consumer loans is not deductible, elimination of some tax shelters, and, a lower overall tax rate. The combined effect of these changes will be a reduced demand for credit (because after tax return on investments is lower and after tax cost of credit for consumer is higher), and an increased supply of credit (because of higher after tax return on interest income). These shifts in supply and demand for credit will drive down the price of money (i.e. interest rates) and consequently foreign demand for US dollars will diminish.

On the monetary policy side, the 1988 election will limit the ability of the Federal Reserve to tighten money supply in 1987 and 1988. There is likely to be a shift in emphasis toward growth and away from fighting inflation. Money supply growth rates should increase from recent levels.

As in any forecast, there are some inherent risks in the RISI forecast.

The variables that could adversely affect economic growth in the U.S. were defined in terms of the following scenario:

"IF...

- BUSINESS INVESTMENT RESPONSE TO TAX REFORM IS EVEN MORE ADVERSE THAN ASSUMED;

- FOREIGN GOVERNMENTS DO NOT ABANDON RESTRICTIVE POLICIES AND REFLATE THEIR ECONOMIES.
- A TRADE WAR DEVELOPS;
- GROWING NONPERFORMING DEBT LOAD CAUSES A BREAKDOWN IN THE FINANCIAL SYSTEM;
- THE FED ERRORS ON THE SIDE OF TIGHTNESS AND FAILS TO OFFSET THE IMPACT OF THE NEW TAX LAW.

THEN...

- STAGNANT ECONOMIC GROWTH AND DEFLATION;
- OR A SEVERE RECESSION WILL OCCUR.

Housing Starts:

The housing sector led the US economy into the current round of healthy growth and housing starts are at peak levels (only in 1978 were housing starts higher). As the US population ages and declines in number, however, the demand for housing will decline. In the 1990's the housing market in the US will be depressed. RISI projects that annual housing starts will start to slide lower and lower from an average of 1.79 million in the period 1985-1989, to 1.49 million in the period 1990-1994, to 1.38 million in the period 1995-1999. Some general trends expected in the housing market are i) greater demand for materials for renovations and remodelling purposes, ii) more demand for vacation homes and second homes, and iii) a general increase in average home size (to around 1900 sq. ft.). These trends will offset the reduced demand for materials associated with declining housing starts.

Conclusions:

Although the US economy is expected to continue growing to the year 1988, housing starts will decline. Interest rates will moderate at 1950's levels and inflation rates will gradually start increasing. The principal factors affecting the course of development of the US economy are the Gramm-Rudman Act, tax reform legislation, expanded money supply growth, and the fact that 1988 is an election year in the US.

Currently the housing sector is very strong with housing starts approaching the record levels of the late 70's. Demographic influences such as a reduced population, and an aging population will probably cause a bust in the housing sector in the 1990's. Annual housing start's will be on the decline by 1990 and this decline will continue throughout the decade up to the year 2000. The reduced demand for materials associated with declining housing starts will be partially offset by i) general trend to larger homes, ii) increased demand for materials for remodelling, and iii) increased demand for vacation homes.

FIGURE 28
TOTAL U.S. LUMBER DEMAND
AND RESIDENTIAL CONSTRUCTION SHARE
1950 - 2000

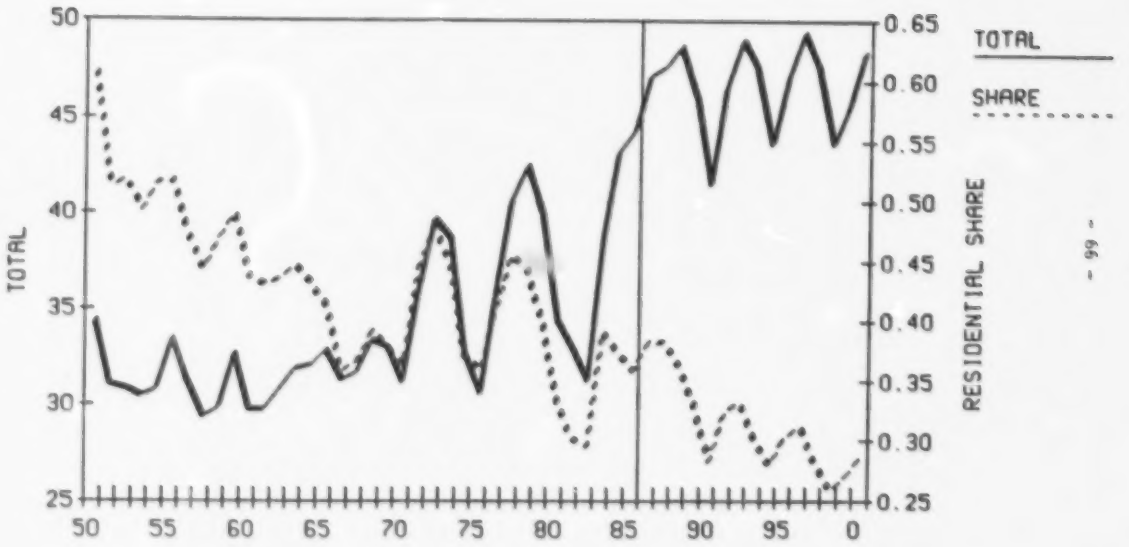


TABLE 10

TOTAL NORTH AMERICAN SOFTWOOD LUMBER DEMAND

	1978	1982	1983	1984	1985	1986	1987	1988	1989
LEVEL:									
NORTH AMERICAN DEMAND	50.8	40.0	47.7	52.1	53.2	56.8	58.1	59.7	57.4
U.S. CONSUMPTION	42.4	31.2	38.6	43.1	44.3	47.0	47.6	48.6	46.0
CANADIAN CONSUMPTION	5.6	5.1	5.4	5.3	5.7	5.9	6.3	6.6	6.6
U.S. OVERSEAS EXPORTS	1.0	1.4	1.3	1.3	1.2	1.5	1.7	1.7	1.8
CANADIAN OVERSEAS EXPORTS	1.7	2.3	2.4	2.5	2.0	2.3	2.5	2.9	3.1
GROWTH:									
NORTH AMERICAN DEMAND	4.1	-5.6	19.4	9.3	2.0	6.8	2.2	2.9	-3.9
U.S. CONSUMPTION	4.6	-5.3	23.7	11.8	2.7	6.2	1.2	2.1	-5.3
CANADIAN CONSUMPTION	3.5	-14.1	6.4	-2.0	6.9	4.8	1.2	2.1	-5.3
U.S. OVERSEAS EXPORTS	-8.0	0.2	-4.3	-3.9	-4.9	27.8	7.3	5.7	4.1
CANADIAN OVERSEAS EXPORTS	1.7	11.2	4.1	1.7	-17.8	14.4	7.4	14.5	7.0

TABLE 11

NORTH AMERICAN SOFTWOOD LUMBER
PRODUCTIVE CAPACITY
(BILLION BOARD FEET)

	1970	1975	1980	1985	1989
U.S.					
WEST COAST	8.7	9.5	9.6	10.8	11.0
INLAND	11.1	11.1	11.0	11.5	11.7
SOUTH	7.8	9.5	11.2	13.0	13.4
OTHER	4.0	4.7	4.8	4.2	4.3
TOTAL	31.6	34.8	36.6	39.5	40.5
CANADA					
B.C.	8.5	13.0	14.9	17.1	18.3
OTHER	4.5	6.0	7.4	9.0	9.9
TOTAL	13.0	18.9	22.3	26.2	28.3
TOTAL NORTH AMERICAN	44.6	52.3	58.9	65.6	68.8

Softwood lumber

Robert Berg
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Introduction:

The Forsim outlook for softwood lumber examined i) softwood lumber demand, ii) softwood lumber productive capacity, iii) production costs, and iv) prices to the year 1989 at the regional level. The base case forecast was developed under a no tariff scenario. Some discussion of the impact of a 10% tariff on Canadian Softwood lumber was also provided.

Analysis:

Softwood lumber demand:

From a historical perspective, softwood lumber has demonstrated suprising growth considering this product is traded in what is suggested to be a mature product market. Average annual US softwood lumber demand was around 31.45 billion bd. ft. in the 1950s and 1960s and grew considerably to around 36.7 billion bd. ft. in the 1970s. Average annual demand is expected to be 41.3 billion bd. ft. in the 1980s and is forecast to grow to 46.1 billion bd. ft. in the 1990s. These levels of consumption seem to contradict some of the earlier discussions of probable busts in the housing market and precipitous declines in housing starts. The high levels of consumption in the face of significant declines in housing reflects a general long term trend to a change in the structure of the lumber market. Figure 28 shows that although total lumber demand has trended upward since the 1950's the proportion of total demand accounted for by residential construction has trended downwards from 60% in the early 50's to around 35% today. This trend is expected to continue to the year 2000. The significance of this trend is that housing start's will become less and less important as an indicator of lumber demand. Table 10 shows the anticipated levels of total North American lumber demand to 1989 and shows the distribution of this demand between US consumption, Canadian consumption, and overseas exports. New record levels in consumption are forecasted for 1986, 1987, and 1988. Total consumption then declines in 1989.

Softwood lumber supply:

Total North American softwood lumber production capacity increased from 44.6 billion board ft. in 1970 to 65.6 billion bd. ft. by 1985. Production capacity is expected to be 68.8 billion bd. ft. by 1989. Table 11 shows how this capacity is distributed across North America. Canada has accounted for the largest proportion of increased capacity. In 1970 the Canadian share of total production capacity was 29% and had grown to 40% by 1985. This trend is part of a longer term trend to increasingly larger shares of the US lumber market accounted for by imports. Table 12 shows that in the 50's, domestic producers accounted for 91% of the domestic lumber demand in the US. By the 80's, the domestic producers share dropped to 69% and imports for 31% of US consumption.

TABLE 12

DISTRIBUTION OF U.S. SOFTWOOD LUMBER MARKET SHARES (NO TARIFF)

	PRODUCER'S		IMPORTS		U.S. APPARENT
	VOLUME	SHARE	VOLUME	SHARE	LUMBER CONSUMPTION
1981	22.8	71%	9.2	29%	32.0
1982	22.2	71%	9.1	29%	31.3
1983	28.0	70%	12.0	30%	40.0
1984	29.6	69%	13.3	31%	42.9
1985	29.7	67%	14.6	33%	44.3
1986	31.6	67%	15.6	33%	47.2
1987	31.9	67%	15.8	33%	47.7
1988	32.6	68%	15.6	32%	48.2
1989	31.2	68%	14.6	32%	45.8
1950s	28.8	91%	2.7	9%	31.5
1960s	26.7	85%	4.7	15%	31.4
1970s	28.2	77%	8.5	23%	36.7
1980s	28.4	69%	12.9	31%	41.3

TABLE 13

COST PROFILE OF THE NORTH AMERICAN SOFTWOOD LUMBER INDUSTRY IN 1986
(U.S. DOLLARS)

	U.S.			CANADA	
	COAST	INLAND	S-Y-P	B.C. INTERIOR	QUEBEC
DELIVERED WOOD	136	140	136	89	107
RESIDUAL INCOME	42	24	59	15	53
NET. DEL. WOOD	94	116	77	73	54
MANUFACTURING COST	102	93	85	58	81
TOTAL VARIABLE COST	196	209	162	135	135
RAIL FREIGHT	85	63	44	70	34
COST DEL. TO CHICAGO	281	272	206	201	169

1) INCLUDES LABOR (DIRECT, OPERATIONS & MAINTENANCE), ENERGY, OPERATION & MAINTENANCE SUPPLIES AND GENERAL & ADMINISTRATION.

TABLE 14

NORTH AMERICAN SOFTWOOD LUMBER PRICES
(NOMINAL AND REAL 1982 $)

NOMINAL:	1979	1982	1983	1984	1985	1986	1987	1988	1989
S-P-F (WESTERN) 2X4	225	140	185	153	153	176	176	185	185
S-Y-P (WESTSIDE) 2X4	252	207	259	230	222	223	225	237	238
HEM-FIR (INLAND) 2X4	254	173	218	191	191	206	211	223	230
DOUG-FIR (GRN. PTD) 2X4	263	153	205	183	184	178	182	198	203
REAL (1982$)									
S-P-F (WESTERN) 2X4	297	140	183	148	147	175	169	170	160
S-Y-P (WESTSIDE) 2X4	332	207	256	223	214	221	217	218	206
HEM-FIR (INLAND) 2X4	336	173	216	185	184	204	203	205	199
DOUG-FIR (GRN. PTD) 2X4	347	153	203	177	178	177	175	182	176

Production costs:

Table 13 is a cost profile of the North American softwood lumber industry. Costs are provided at the regional level. Quebec sawmills are the lowest cost producers of softwood lumber in North America. B.C. interior mills are the second lowest. The principal comparative advantages of Quebec mills are low delivered wood costs and low transportation costs. The principal advantage for B.C. mills is the very low manufacturing costs. The RISI forecast to 1989 shows that Canadian mills will remain low-cost producers of softwood lumber vis-a-vis producers on the west coast and in the US South.

North American softwood lumber prices:

Table 14 demonstrates recent trends (1979-1985) and future projections (1986-1989) of North American softwood lumber prices in nominal and real (1982) dollars. Although the price of southern yellow pine has been relatively stable, prices of other lumber categories (i.e., SPF, Hem-Fir, Douglas Fir) have declined since the record high levels of the late 70's. Western SPF lumber has been the hardest hit. The price of SPF lumber dropped 51% in real terms between 1979 and 1985. The weakening of the Canadian dollar vis-a-vis the US dollar during this period protected Canadian producers from the large price declines. This explains why Canadian producers have captured larger shares of the domestic US market.

Douglas-fir lumber has been equally hard-hit with price declines in the order of 49% between 1979 and 1985.

The short term prognosis for lumber prices is relatively modest price increases from 1985 levels. Prices will not increase, however, to the high levels that were reached in the late 70's. The expected price of western SPF 2 x 4s in 1989 should be $185 per M fbm (US dollars). The reason for the modest price increases (given the significant forecasted growth in total demand) is the expected growth in softwood lumber production capacity which will abate any upward pressure on price.

Impact of 10% Tariff on Canadian softwood lumber production:

The RISI analysis of the impact of a U.S. tarriff on Canadian lumber production was made prior to the preliminary 15% ruling handed down by the Commerce Dept. in November. RISI had anticipated a 10% tariff and had determined the impact of this tariff by calculating the percentage change in the values of selected variables from the base case (i.e., no tariff) forecast. This assessment is provided as follows:

		1987-1990
Prices:	Western S.P.F., KD, 2 x 4	-3.7%
	Douglas fir KD 2 x 4	+4.3%
Inland:	Hem. Fir, KD; 2 x 4	+4.3%
	Southern pine	+ 3.9%

Production:	U.S.	+ 1.0%
	Canada	- 2.1%

Canadian share of U.S. Softwood lumber market:

Base case	32%
Tariff simulation	30%

North American Softwood lumber capacity:

U.S.	+ 2.0%
Canada	- 0.3%
Total	+ 1.0%

Stumpage Prices:

All species prices	+ 7.6%
Southern pine	+ 2.0%

The RISI forecast projects that a 10% tariff on Canadian production would have a relatively small impact on US lumber production (i.e., a 1% increase over the base case) although US capacity would increase 2% over the base case. The primary effect would be to drive up prices of all categories of lumber except SPF. Ultimately the increased revenue to producers will be captured through increased stumpage prices. On the Canadian side, some "buy-back"[2] of the tariff will be accepted by Canadian producers. The final impact should be that the Canadian share of the U.S. softwood lumber market drops from 32% to 30%.

Conclusion:

Average annual US softwood lumber demand has grown from around 31 billion board feet in the 1950's to 41 billion bd. ft. in the 1980's. Average annual US demand is forecast to grow to 46 billion bd. ft. in the 1990's. This growth in demand marks significant structural changes that have occurred in the lumber market. The residential construction (i.e., new homes) share of US consumption has been steadily declining since 1950. This trend should continue to the year 2000. Significant trends are also apparent on the supply side. In the 50's, domestic producers accounted for 91% of US domestic consumption. By the mid-80s the domestic producers share dropped to 69% of US demand. Most of the increased import share has come from Canadian producers who are low cost producers because of either i) low wood costs, ii) location advantages, or iii) ultra-modern mill infrastructure. This trend has caused US producers to launch a countervailing duty action against Canada. The impact of a 10% tariff on Canadian lumber imports would have the following impacts i)increases in lumber prices for U.S. consumers, ii) 1% increase in U.S. production and a 2% decline in Canadian production, iii) significant increases in US stumpage prices.

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[2] i.e., Canadian producers will accept a lower price (FOB mill gate) without production reductions or decreases in capacity.

Panel products (softwood plywood, waferboard and OSB, hardboard)

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Introduction:

This outlook presentation analyzed panel products in general and more specifically structural panels, and hardboard.[3] As with previous outlook presentations information was provided on recent trends and a short (1988) and medium-(2000) term forecasts of demand, supply, price, and foreign imports to the US.

Analysis:

Structural panels:

Structural panel products are defined to include veneered panels (which are further subdivided into rough and sanded plywood) and non-veneered panels (including oriented strand board and waferboard). At the aggregate level, total US structural panel demand has grown by 3.2 billion square ft. (3/8" basis) since 1978 (Table 15). Total US demand is forecast to grow an additional 3.2 billion sq. ft. by the end of 1988. Although growth in demand has been observed and is expected to continue, the structure of the market is changing. These developments are similar to the trends described in the lumber outlook presentation. The changing market can be observed through trends in end-use shares (Table 16). As in the lumber case, the proportion of total US panel demand in residential construction has declined. This trend should continue to the year 2000. By the end of the century the share of total US demand in residential construction will have dropped to around 30%. Increases in the use of structural panels for repairs and alterations, have and will continue to offset residential construction use. By the year 2000, repairs and alterations should increase to 35% of total US demand.

Table 17 shows total US structural panel demand from 1970 and forecasted to the year 2000. Total demand is further disaggregated by panel type. Total structural panel demand is expected to grow to a level of 29 billion square feet by the year 2000. However, the type of panels satisfying this demand will be drastically different than the product distribution of the early 70's. In the early 70's structural panel demand was comprised almost entirely of veneered panel with 75% in rough grades and 25% in the sanded grades. In the latter part of the 70's, waferboard and OSB began to capture small portions of the structural panel market (3%). In the first part of the 80's, the non-veneered panels share of total demand increased dramatically to 9%. By the turn of the century, RISI projects that the non-veneered share of total structural panel demand will increase to 51%. Most of the growth in non-veneered panel will occur at the expense of the rough grades of veneered panel which will decline due to i) housing starts reductions, and ii) direct substitution for non-veneered panel grades. The proportion of the market accounted for by the sanded plywood grades should remain relatively constant. The primary factors contributing to the expected dramatic substitution of

[3]MDF and particle board were reviewed in detail in session IV.

non-veneered panels for veneered panels is the increasing scarcity of panel quality roundwood and the relative cost differentials in wood input costs between the veneered and non-veneered products.

Table 18 provides the RISI forecast of structural panel prices for west coast plywood, southern yellow pine plywood, and waferboard on a FOB mill basis and on a Chicago delivered basis. Significant price differentials between these products will persist until the end of the century.

Table 19 provides the outlook situation for Canada to the year 2000. Total demand (domestic and exports) for Canadian structural panel products is predicted to grow 43% to 6.6 billion square ft. by the end of the century. Plywood demand will decline however, the decreases are more than compensated by dramatic increases in non-veneered structural panels. Although exports of non-veneered panels will grow, the major increases in non-veneered demand growth are accounted for by increased domestic consumption.

Hardboard:

Traditionally the major use of hardboard has been the residential siding market. This market is coming under serious attack from non-wood based siding products made of vinyl and aluminum. In addition, as previously described, a housing bust is expected in the 90's. The combined effect of these influences will be a long-term downturn in hardboard demand. Historical and forecasted 5 year averages of total hardboard demand from 1976 to 2000 are provided in Table 20. Hardboard demand in the latter stages of the 90'S will be about 45% lower than demand in the late 70's.

Conclusion:

Total US structural panel demand grew 13% to 24 billion sq. ft. (3/8 in basis) between 1978 and 1985. Total demand is forecast to grow an additional 12% to 27.2 billion sq. ft. by 1988. As in the lumber case, use of structural panels for residential construction is declining in relative importance while alternatives and repairs are becoming more important. Another significant trend in the structural panel is changes in the types of panels making up this demand. In the early 70s structural panel demand was comprised almost entirely of veneered panels with 75% in rough grades and 25% in the sanded grades. In the latter part of the 70s, waferboard and OSB began to capture a small portion of the market (3%). In the first part of the 80s, the non-veneered panel share of total demand increased to 9%. By the turn of the century, RISI projects that the non-veneered share of total structural panel demand will increase to 51%.

In Canada, total demand (domestic and exports) for Canadian structural panel products is forecast to grow 43% to 6.6 billion sq. ft. by the year 2000. Plywood demand is expected to decline, however, growth in non-veneered panels will more than compensate. the major increases in non-veneered demand growth are from increased domestic consumption.

The hardboard market is coming under serious attack from non-wood based siding products made from vinyls and aluminum. Also, the anticipated housing bust in the 90s will also decrease hardboard demand. The combined effect of these influences will be a long-term downturn in hardboard demand. Demand in the latter stages of the 90s will be 45% lower than in the late 70s.

TABLE 15

U.S. STRUCTURAL PANEL DEMAND BY END USE (BSF, 3/8-INCH)

	1978	1982	1983	1984	1985	1986	1987	1988
TOTAL U.S. DEMAND	20.8	16.3	20.4	23.0	24.0	26.7	26.9	27.2
RESIDENTIAL	10.3	5.3	8.7	9.4	9.4	11.0	11.1	10.8
NONRESIDENTIAL	2.0	2.0	2.0	2.4	2.7	2.6	2.3	2.5
REPAIRS & ALTERATIONS	5.1	5.3	5.5	6.9	7.6	8.4	8.7	9.0
INDUSTRIAL	3.1	3.3	3.6	4.0	4.0	4.1	4.2	4.5
EXPORTS	0.3	0.5	0.6	0.4	0.3	0.5	0.5	0.5
SHARES	100%	100%	100%	100%	100%	100%	100%	100%
RESIDENTIAL	50%	33%	43%	41%	39%	41%	41%	39%
NONRESIDENTIAL	9%	12%	10%	10%	11%	10%	9%	9%
REPAIRS & ALTERATIONS	24%	32%	27%	30%	32%	32%	32%	33%
INDUSTRIAL	15%	20%	17%	17%	17%	15%	16%	16%
EXPORTS	2%	3%	3%	2%	1%	2%	2%	3%

TABLE 16 U.S. STRUCTURAL PANEL DEMAND
BY END USE (BSF, 3/8-INCH)
ANNUAL AVERAGES, 1971-2000

	1971-1975	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000
TOTAL U.S. DEMAND	16.0	19.3	20.2	25.9	27.0	29.0
RESIDENTIAL	8.0	8.8	7.7	9.9	9.2	8.8
NONRESIDENTIAL	1.6	1.9	2.2	2.5	3.1	3.6
REPAIRS & ALTERATIONS	3.7	5.1	6.1	8.6	9.1	10.2
INDUSTRIAL	2.3	3.1	3.7	4.4	5.1	6.0
EXPORTS	0.4	0.4	0.5	0.5	0.4	0.4
SHARES	100%	100%	100%	100%	100%	100%
RESIDENTIAL	50%	46%	38%	38%	34%	30%
NONRESIDENTIAL	10%	10%	11%	10%	11%	12%
REPAIRS & ALTERATIONS	23%	26%	30%	33%	34%	35%
INDUSTRIAL	14%	16%	18%	17%	19%	21%
EXPORTS	3%	2%	3%	2%	2%	2%

TABLE 17 U.S. STRUCTURAL PANEL DEMAND BY PANEL TYPE (BSF, 3/8-INCH) ANNUAL AVERAGES, 1971-2000

	1971-1975	1976-1980	1981-1985	1980-1990	1991-1995	1996-2000
PLYWOOD						
ROUGH	12.8	15.4	15.0	15.8	12.4	10.5
SANDED	4.3	3.5	3.4	3.8	3.8	3.6
TOTAL	17.1	18.8	18.4	19.7	16.1	14.1
WAFERBOARD/OSB	--	0.5	1.8	6.3	10.9	14.9
TOTAL PANELS	17.1	19.3	20.2	25.9	27.0	29.0
SHARES						
PLYWOOD						
ROUGH	75%	79%	74%	61%	46%	36%
SANDED	25%	18%	17%	15%	14%	13%
TOTAL	100%	97%	91%	76%	60%	49%
WAFERBOARD/OSB	--	3%	9%	24%	40%	51%

NOTE: STRUCTURAL PANEL DEMAND AVERAGED: 4.6 BSF PER YEAR IN 1950s
11.4 BSF PER YEAR IN 1960s

TABLE 18

STRUCTURAL PANEL PRICES

($/MSF)

	1985	1986	1987	1988	AVG. 1996-2000
PLYWOOD					
WEST COAST, 1/2-INCH, 4/5-PLY, CDX					
- FOB	196	207	211	222	358
- DELIVERED CHICAGO	245	251	257	271	438
SYP, 1/2-INCH, 3-PLY, CDX (WESTSIDE)					
- FOB	177	181	191	205	317
- DELIVERED CHICAGO	201	203	213	229	356
WAFERBOARD (24/16)					
7/16-INCH, FOB MILL, NORTH CENTRAL	158	154	165	179	287
7/16-INCH, DELIVERED CHICAGO	173	163	174	189	304

TABLE 19

CANADIAN STRUCTURAL PANEL DEMAND AND SUPPLY

		1976-1980	1981-1985	1986-1990	1991-1995	1996-2000
TOTAL DEMAND	- TOTAL	3.2	3.3	4.6	5.2	6.6
	- PLYWOOD	2.7	2.3	2.2	1.7	1.2
	- NONVENEERED	0.5	1.0	2.4	3.5	4.4
EXPORTS	- PLYWOOD	0.4	0.4	0.4	0.4	0.4
	- NONVENEERED	0.2	0.5	1.2	1.6	1.8
CAPACITY	- TOTAL	3.7	4.1	5.1	5.9	6.4
	- PLYWOOD	3.1	2.7	2.4	1.8	1.4
	- NONVENEERED	0.6	1.3	2.7	4.1	5.0
DEMAND/CAPACITY	- TOTAL	88%	81%	90%	89%	89%
	- PLYWOOD	88%	83%	92%	94%	89%
	- NONVENEERED	86%	79%	89%	86%	88%

TABLE 20

TOTAL HARDBOARD DEMAND
(BSF, 1/8-INCH)

1976-1980	8.10
1981-1985	7.14
1982	5.93
1983	7.15
1984	8.15
1985	7.87
1986	7.39
1987	6.66
1988	6.38
1989	5.70
1990	4.76
1986-1990	6.18
1991-1995	5.04
1996-2000	4.54